

Environmental Performance and Political
Alignment Around the 2024 U.S. Election

PRICING GREEN IN A RED TURN



SCHOOL OF
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Abstract

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Keywords: Environmental performance, political alignment, political contributions, cumulative abnormal returns, The 2024 U.S. election

Purpose: This study examines whether environmental performance and Republican political alignment explain abnormal returns around the 2024 U.S. election, and whether political alignment moderates this relationship.

Methodology: The study uses an event-study combined with cross-sectional regressions. Firm-level cumulative abnormal returns are estimated around the 2024 U.S. election using an event window of $[0,0]$ and a broader event window of $[-5,+5]$ trading days. Abnormal returns are regressed on firms' environmental performance, political alignment and their interaction, while controlling for firm characteristics and industry fixed effects.

Theoretical perspectives: The study builds on shareholder primacy, stakeholder theory, the Efficient Market Hypothesis and signaling theory to explain how markets price environmental performance and political alignment during political change.

Empirical foundation: The study is based on U.S. firms in the S&P 1500. Stock prices, environmental scores and firm-level control variables are sourced from S&P Capital IQ Pro, while political contribution records are compiled from OpenSecrets. Environmental performance is measured using firms' E-scores, and Republican political alignment is measured using corporate and employee political contribution-based ideology measures.

Conclusions: The results show positive aggregate abnormal returns around the election. Firms with higher environmental performance experienced lower cumulative abnormal returns, suggesting that investors reassessed its value under an expected shift toward weaker environmental regulation. Stronger Republican political alignment, based on donations, was associated with more favorable market reactions, particularly on the event day. The study finds no evidence that political alignment moderated the relationship between environmental performance and abnormal returns.

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1 Introduction

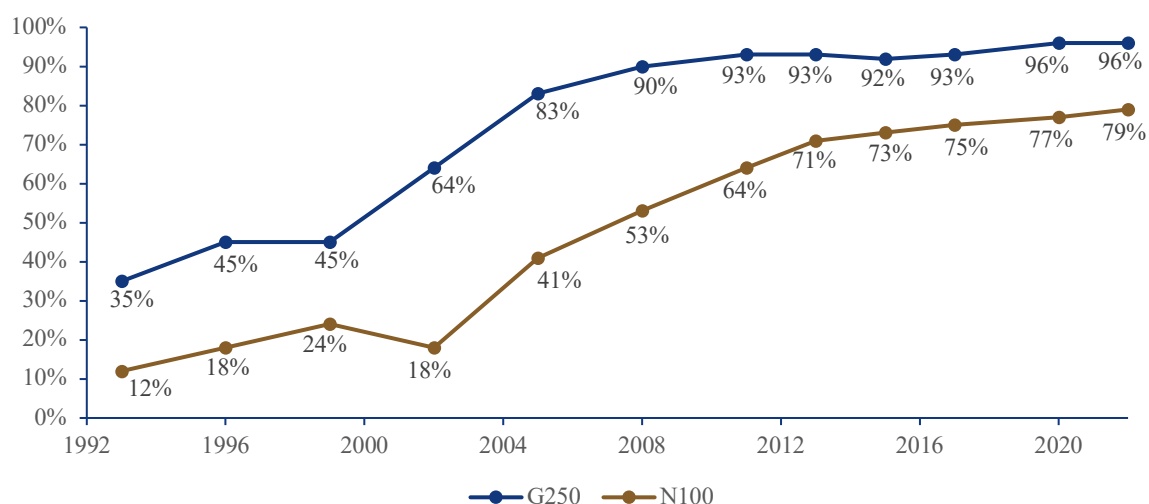
This chapter introduces the study's background, research problem, purpose, research questions, contribution and overall structure.

1.1 Background

Environmental, Social and Governance (ESG) considerations have undergone a remarkable transformation from a niche corporate practice to a defining feature of modern capital markets. As recently as 1993, only 12% of the world's largest companies engaged with ESG reporting. By 2022, that figure had risen to 96% among the world's 250 largest companies by revenue and 79% among the largest 100 companies across 58 countries (**Figure 1**). The institutionalisation of ESG has been supported by the UN (2004) 'Who Cares Wins' report which established the ESG taxonomy, and further by international sustainability agreements, such as the Paris Agreement and the UN Sustainable Development Goals. Together, these initiatives have transformed ESG awareness from a voluntary practice into a widely expected component of corporate strategy.

Figure 1. Global sustainability reporting rates, 1993-2022.

Note: G250 refers to the world's 250 largest companies by revenue, while N100 refers to the 100 largest companies in each surveyed country. Source: KPMG International (2022), Survey of Sustainability Reporting.



The growing embeddedness of ESG in financial markets has naturally prompted researchers to examine whether environmental performance translates into measurable financial outcomes, and the empirical literature has largely found that it does. A positive relationship between ESG performance and stock returns is well established (Friede et al., 2015; Giese et al., 2019). A particularly informative setting in which to study this relationship is during unexpected or uncertain events, as market reactions allow for a clearer observation of the role of

environmental performance in stock returns. Higher ESG scores have been found to act as a buffer during crises such as the Global Financial Crisis (Lins et al., 2017) and during periods of uncertainty such as the COVID-19 pandemic (Abedifar et al., 2022). Yet considerably less attention has been paid to the uncertainty that can arise from elections or shifts in government policy, despite evidence that such political events have a direct effect on capital markets (Li & Born, 2006; Pástor & Veronesi, 2013). The 2024 U.S. presidential election represented precisely such an instance, and one with particularly direct implications for the market valuation of environmental performance.

This gap is particularly relevant given the increasing rise of anti-establishment and populist political parties across the western world, which have placed opposition to climate action at the centre of political debate (Yazar & Haarstad, 2023; Sælen & McCright, 2025). The most consequential expression of this shift for US financial markets was Trumps 2024 presidential election victory, alongside Republican majorities in both the Senate and the House of Representatives (Ahmed et al., 2025), with his campaign's explicit emphasis on fossil-fuel expansion and environmental deregulation (Volcovici & Slattery, 2024; Martínez & Mai, 2024) signalling a fundamental reversal of the regulatory environment. The role of money in politics has attracted increasing public interest in recent years (Pew Research Center, 2023), and as campaigning has grown increasingly expensive, many politicians have turned to direct corporate contributions, corporate Political Action Committee (PAC)¹ contributions, to finance their campaigns (Krumholz, 2013). The scale of this involvement grew dramatically following *Citizens United v. Federal Election Commission* (2010), which allowed corporations to contribute unlimited amounts to Super PACs², including establishing their own Super PACs. Against this backdrop, the 2024 election stood as the second most expensive in US history for corporate political spending, with corporate PAC contributions totalling approximately \$383.5 million, of which approximately \$222 million was directed toward Republican recipients (OpenSecrets, n.d.-a).

1.2 Problematization

The existing literature largely treats the relationship between ESG performance and stock returns as positive and stable (Friede et al., 2015; Giese et al., 2019), an assumption that has

¹ Organizations established to raise and spend money to elect or defeat political candidates.

² Traditional PACs are subject to strict contribution limits and can donate directly to campaigns, while Super-PACs can raise and spend unlimited sums but are legally prohibited from coordinating directly with candidates.

largely gone unquestioned, and understandably so. The empirical evidence underpinning it was produced during a period in which the broader global political and regulatory environment was moving consistently toward decarbonisation and environmental accountability. While this regulatory trend spans decades, it is perhaps most concretely illustrated in financial terms by the Inflation Reduction Act of 2022, described as the single largest investment in climate and energy in American history (U.S. Department of Energy, 2023), which channelled hundreds of billions of dollars toward clean energy businesses, creating tangible financial incentives for environmental performance. Indeed, even Trump's first election in 2016 did not challenge this assumption, as Ramelli et al. (2021) find that environmentally friendly firms experienced positive abnormal returns following the unexpected election of Trump, with investors interpreting the anti-environmental shift as transitory and expecting stricter future regulation to preserve the long-run value of environmental performance. While previous research examining corporate sustainability during periods of uncertainty has predominantly focused on composite ESG scores, the environmental pillar has recently been argued for as being the primary driver of the relationship between ESG performance and stock returns (Galema & Gerritsen, 2025). Consequently, isolating the environmental score (E-score) is therefore particularly warranted for capturing direct environmental valuation effects. While recent evidence has begun exploring immediate market reactions to Trump's 2024 election victory on green portfolios (e.g., Cosma et al., 2025), empirical understanding of how the broader equity market prices general, firm-level environmental performance remains limited. This is particularly true in the context of the 2024 presidential election, where the political and regulatory foundations underpinning the value of environmental performance were explicitly challenged.

As illustrated in **Figure 2** (See section 3.4.1), prediction market probabilities converged to the point where the election was too close to call in the weeks immediately before election day, suggesting the outcome constituted a genuine shock rather than the confirmation of something already fully priced in. Unlike 2016, where Trump's anti-environmental intentions were stated but untested, investors approaching the 2024 election had observed a full term of actual governance and a more explicit and detailed deregulatory mandate, making the expectation of a subsequent policy reversal considerably less credible. In this context, the political and regulatory foundations underpinning the assumed positive relationship between environmental performance and stock returns are called into question. Could Trump's re-election have instead constituted a liability for firms with high environmental performance? If so, it would represent

a unique setting in the literature, where the political shock is specifically directed at the very characteristic being measured rather than constituting a general source of economic uncertainty.

Yet the implications of Trump's election were unlikely to have been uniform across all firms. Prior research has established that political alignment carries measurable financial value, demonstrating that firms connected to winning or losing candidates or parties, either through political contributions or other channels, generate significant abnormal returns (Cooper et al., 2010; Child et al., 2021; Jayachandran, 2006). Political donations in this context are not merely an expression of ideological preference but a rational financial strategy, and the record scale of corporate PAC contributions in the 2024 cycle, with \$222 million directed toward Republican recipients (OpenSecrets, n.d.-a), suggests that many firms had actively positioned themselves politically ahead of the election. Whether this pattern extended to the 2024 election, with its anti-environmental mandate and consolidated Republican control, remains an open question.

The relationship between political alignment and environmental performance is, however, not straightforward. High environmental performance firms face a conflict when it comes to political donations. If Trump's victory was anticipated, such firms may have had reason to donate Republican to maintain access to the incoming administration and possibly try to influence policy in their favour (Ansolabehere et al., 2003). Yet donating to a candidate whose agenda is explicitly directed against core business activities should run contrary to their own financial interests. This complexity suggests that environmental performance and political alignment may affect market reactions through separate valuation channels, and that the relationship between the two dimensions may not be easily disentangled, motivating a more careful empirical examination of whether and how political alignment moderates the market valuation of environmental performance around Trump's 2024 election victory.

1.3 Purpose and Research Questions

The purpose of this study is threefold. First, the paper empirically investigates whether a firm's environmental performance, as measured by its E-score, explains abnormal returns around the 2024 U.S. election. Second, the paper examines whether firms with stronger Republican political alignment experienced more favourable abnormal returns, since political contributions may signal firms' proximity to the incoming administration and expected policy exposure. Third, the paper investigates whether corporate political alignment moderates this relationship, such that the effect of environmental performance on abnormal returns differs depending on

the degree of firms' Republican political alignment. To address these purposes, an event study is conducted on a sample covering approximately 90% of US market capitalization, using Trump's election victory on November 6, 2024 as the event date, which also saw the Republican party secure majorities in both the Senate and the House of Representatives, consolidating executive and legislative power under a unified government. The study is motivated by a gap in the literature on how politically induced regulatory uncertainty affects the market valuation of environmental performance and political alignment, and by the underexplored role of corporate political alignment as a moderating dimension. To address the purpose of the study, the following research questions will be examined:

RQ1: *Is environmental performance associated with cumulative abnormal returns around the 2024 U.S. election?*

RQ2: *Is Republican political alignment associated with cumulative abnormal returns around the 2024 U.S. election?*

RQ3: *Does Republican political alignment moderate the relationship between environmental performance and cumulative abnormal returns?*

1.4 Main Findings

The study finds that the 2024 Republican election victory was relevant for the valuation of U.S. equity markets. At the aggregate level, abnormal returns were positive both on the event day and over the broader event window, suggesting that the election outcome led to a meaningful market reaction.

The cross-sectional results show that firms with higher E-scores experienced lower cumulative abnormal returns around the election, consistent with the interpretation that investors reassessed the value of environmental performance under an expected shift toward weaker environmental regulation and stronger support for fossil-fuel activity. By contrast, firms with more Republican-oriented corporate and employee donation profiles experienced more favourable abnormal returns, particularly on the event day, suggesting that investors interpreted political alignment as a signal of firms' positioning relative to the incoming administration. Finally, the study finds no evidence that Republican political alignment moderated the relationship between environmental performance and abnormal returns. The interaction results instead suggest that environmental performance and political alignment affected market reactions through separate valuation channels.

1.5 Contribution

This study adds to the literature on environmental performance and stock market reactions by examining a setting in which deregulation from political change is specifically directed at the very characteristic being measured. Ramelli et al. (2021) found that climate responsible firms experienced positive abnormal returns around Trump's 2016 victory, as investors treated the anti-environmental shift as transitory. The 2024 election provides a setting where that interpretation no longer holds. The finding that firms with higher E-scores experienced lower abnormal returns suggests that the market value of environmental performance is conditional on the policy environment supporting it, rather than functioning as a general resilience mechanism.

The study also contributes to both the corporate finance and political science literatures on political connections and firm value. Using contribution-based measures of Republican alignment based on both corporate and employee donations, the study finds that more aligned firms experienced more favorable abnormal returns. This is consistent with the view that political donations are interpreted by investors as signals of firms' proximity to the incoming administration and provides empirical evidence to the broader research on the role of corporate money in politics.

We further contribute by examining whether political alignment moderates the relationship between environmental performance and abnormal returns. The hypothesis was that Republican alignment among environmentally strong firms could signal political proximity that partially offsets the deregulatory shock. The finding that it does not suggests that the repricing of environmental performance was broad rather than firm-specific, and that environmental and political characteristics operated as distinct valuation channels rather than interacting dimensions of policy exposure.

1.6 Outline

The remainder of the thesis is structured as follows. Chapter 2 develops the theoretical framework and reviews relevant empirical literature, leading to the formulation of the hypotheses. Chapter 3 describes the empirical strategy, sample construction, variable definitions, event study procedure and regression models. Chapter 4 presents descriptive statistics, correlation analysis and preliminary event-study evidence. Chapter 5 reports and discusses the empirical results for environmental performance, political alignment and their

interaction, including robustness tests. Chapter 6 concludes by summarizing the main findings, discussing their implications and reflecting on the study's limitations.

2 Theoretical and Empirical Background

This chapter reviews the theoretical perspectives and prior empirical research relevant to the study's three hypotheses, drawing on shareholder primacy and stakeholder theory, the Efficient Market Hypothesis and signalling theory to motivate the expected relationships between environmental performance, political alignment and abnormal returns.

2.1 Shareholder Primacy, Stakeholder Theory and Environmental Performance

2.1.1 Shareholder Primacy and Environmental Performance

A central theoretical tension in corporate finance and corporate governance concerns whose interests should guide managerial decision-making and how corporate resources should be allocated. This question is particularly relevant when firms invest in activities whose financial consequences are not immediately observable, such as environmental initiatives. Environmental performance may be interpreted either as a value enhancing response to regulatory, stakeholder and market pressures, or as a use of corporate resources that must be justified by its contribution to shareholder wealth. The theoretical relevance of environmental performance therefore depends on how the purpose of the firm is understood.

From a shareholder primacy perspective, the firm's primary objective is to maximize shareholder value. This view is rooted in earlier debates on corporate purpose and managerial accountability. Berle and Means (1932) highlighted how modern corporations separate ownership from managerial control, while the Berle–Dodd debate raised the question of whether managers should be accountable primarily to shareholders or also to wider social interests (Berle, 1931; Dodd, 1932). Friedman (1970) later became one of the most influential modern proponents of the shareholder-oriented view, arguing that corporate resources should be used in accordance with shareholders' interests within the boundaries of law and ethical conduct. Jensen (2001) similarly argues that value maximization provides a necessary objective function for corporate decision-making, since firms cannot effectively maximize several competing objectives at once.

Applied to environmental performance, shareholder primacy does not imply that environmental initiatives are irrelevant or undesirable. Rather, it implies that such initiatives are justified when they are expected to contribute to firm value. Environmental investments

may be consistent with shareholder value maximization if they reduce operating costs, lower regulatory or litigation risk, improve access to capital, increase demand from customers or strengthen expected future cash flows. However, if environmental initiatives require substantial resources without clear expected financial benefits, they may be interpreted as discretionary spending, managerial preference or an inefficient allocation of capital.

2.1.2 Stakeholder Theory and Environmental Performance

Stakeholder theory offers a broader perspective on corporate purpose. Freeman (1984) argues that firms should be understood as embedded in relationships with multiple stakeholder groups that can affect, or are affected by, the firm's activities. These groups include employees, customers, suppliers, creditors, regulators, communities and investors. Donaldson and Preston (1995) further distinguish between descriptive, instrumental and normative dimensions of stakeholder theory. The descriptive dimension explains how firms interact with multiple stakeholder groups, the instrumental dimension examines whether stakeholder management contributes to firm performance, and the normative dimension argues that stakeholders have legitimate interests that should be considered in their own right.

This study primarily relies on the instrumental dimension of stakeholder theory. The empirical question is not whether firms have a moral obligation to improve environmental outcomes, but whether environmental performance is reflected in market valuation. From an instrumental stakeholder perspective, environmental performance may create value by improving relationships with regulators, investors, customers and communities. It may reduce conflict, strengthen legitimacy, lower exposure to future environmental liabilities and improve firms' ability to adapt to changing regulatory and market expectations. In this sense, stakeholder-oriented environmental initiatives are not necessarily separate from shareholder value. Instead, they may represent one mechanism through which firms manage risk and preserve long-term competitiveness. Environmental performance is therefore a useful setting in which to examine the tension between shareholder primacy and stakeholder theory, since its financial relevance depends on whether such initiatives are expected to generate value for shareholders.

2.1.3 The Conditional Value of Environmental Performance

Prior research supports the view that sustainability characteristics can be financially relevant. At the broader ESG level, Friede et al. (2015) synthesize more than 2,000 empirical studies and find that the relationship between ESG and corporate financial performance is predominantly non-negative, with roughly 90% of studies reporting either a positive or neutral

relationship. Flammer (2015) provides more causal evidence by examining close-call shareholder proposals related to corporate social responsibility. Using a regression discontinuity design, she finds that the adoption of such proposals leads to positive announcement returns and improvements in accounting performance, suggesting that sustainability initiatives can affect firm outcomes rather than merely reflect pre-existing firm quality. Albuquerque et al. (2019) develop and test a model in which CSR is predicted to increase firm value by reducing systematic risk. Their argument is that stronger CSR may make firms' cash flows less sensitive to economic downturns, which lowers required returns and increases valuation.

Building on this broader ESG evidence, more recent finance research has examined environmental performance specifically and shown that it operates through several distinct financial channels. On the financing side, Chava (2014) shows that firms with environmental concerns, including hazardous chemical exposure, substantial emissions and climate change concerns, face higher costs of both equity and debt capital, suggesting that environmental weaknesses translate directly into firms' financing conditions. This pricing of environmental risk extends beyond traditional capital markets. Ilhan et al. (2021) document the same pattern in the option market, where firms with higher carbon emissions face higher costs of option protection against downside risk, indicating that investors price carbon tail risk. Bolton and Kacperczyk (2021) push the argument further, showing that carbon emissions are priced in the cross-section of US stock returns, as firms with higher emissions earn higher returns consistent with a carbon premium. From the investor side, Krueger et al. (2020) find that institutional investors view climate risks, particularly regulatory risks, as financially material for portfolio firms and commonly address these risks through risk management and engagement. Taken together, this body of work establishes environmental performance as a firm characteristic with documented valuation implications across profitability, market valuation, cost of capital and stock market reactions.

Consequently, the financial value relevance of environmental performance should not be treated as static. Stakeholder theory explains why environmental performance may create value through legitimacy, stakeholder relationships and risk management, while shareholder primacy explains why such investments must ultimately be assessed in relation to expected financial benefits. The value relevance of environmental performance is therefore conditional, depending heavily on whether the political and regulatory environment is expected to amplify or diminish the financial returns of environmental preparedness.

2.2 Efficient Market Hypothesis and Political Regime Change

2.2.1 Market Efficiency and Political Information

The second theoretical perspective concerns how financial markets incorporate information into security prices. The Efficient Market Hypothesis originates from the idea that capital markets aggregate dispersed information through the trading decisions of investors. In an efficient market, prices adjust as investors interpret available information and revise their expectations about firms' future cash flows, risk and required returns. Fama (1970) formalizes this view by arguing that security prices reflect available information.

Fama (1970) distinguishes between different forms of market efficiency. Weak-form efficiency implies that prices reflect historical price information. Semi-strong-form efficiency implies that prices reflect all publicly available information, including financial statements, macroeconomic information and political news. Strong-form efficiency implies that prices also reflect private information. This study is primarily grounded in the semi-strong form, since presidential election outcomes, campaign platforms and policy expectations are public information that investors can observe and interpret. Under this form of efficiency, political information may affect stock prices when it changes expectations about the future policy environment facing firms.

The Efficient Market Hypothesis does not require that all investors interpret information identically, nor that prices are always fundamentally correct. Rather, the theory implies that prices reflect the market's aggregate interpretation of available information. Fama (1991) emphasizes that market efficiency should be understood as a testable hypothesis about how information is reflected in prices, rather than as a claim that prices are perfect measures of fundamental value at all times. Similarly, Grossman and Stiglitz (1980) argue that perfectly informationally efficient markets are theoretically problematic, since investors would have little incentive to acquire costly information if prices already reflected all information completely. This suggests that market efficiency should be interpreted as a process through which information is incorporated into prices, rather than as an assumption of perfect and immediate valuation accuracy.

A central implication of the Efficient Market Hypothesis is that prices are forward-looking. Investors value firms not only on the basis of current performance, but also on expectations about future cash flows, risk and required returns. This is particularly relevant in politically uncertain settings, where investors form expectations over possible policy regimes. As new

political information becomes available, investors may revise these expectations and adjust valuations before actual policy changes are implemented, since firm value depends on the perceived likelihood of future policy conditions.

2.2.2 Political Regime Change and Firm Valuation

Firms do not operate independently of the political environment, and a growing body of research documents how policy changes affect firm value through expected costs, investment incentives and competitive conditions. At the asset pricing level, Pástor and Veronesi (2013) show that political uncertainty is priced in financial markets, as political news shifts expectations about future government policy, risk premia and stock prices. Kelly et al. (2016) extend this evidence to the option market, where the cost of political risk protection rises around elections, suggesting that investors require compensation for exposure to political risk. The implications extend beyond financial markets into real corporate behaviour, as Julio and Yook (2012) show that firms reduce investment around national elections, indicating that political uncertainty also affects firms' real economic decisions by increasing uncertainty about future policy. Taken together, this body of work establishes that political events can influence firm valuation when they change expectations about future policy environments. However, such effects are unlikely to be uniform across firms, since firms differ in their exposure to regulation, subsidies, enforcement intensity and political decision-making.

Prior empirical research further supports this firm-level heterogeneity. In the climate-policy context, Ramelli et al. (2021) show that firms' sustainability characteristics shaped investor responses to changes in expected U.S. climate policy around the 2016 Trump election and the 2020 Biden election. More recently, Cosma et al. (2025) provide closely related evidence from the 2024 election, finding that higher environmental scores were associated with lower abnormal returns, with a one-unit increase in E-score associated with 0.657% lower CAR over a $[-1,+1]$ event window. In the political-connections literature, Goldman et al. (2008) show that S&P 500 firms with Republican board connections experienced cumulative abnormal returns of approximately 2.8% to 3.5% over the $[+1,+2]$ to $[+1,+5]$ event windows following the 2000s presidential election. Similarly, Akey (2015) finds that firms donating to winning candidates earned higher abnormal returns than firms donating to losing candidates around close elections. Together, these studies suggest that political events may be priced differently across firms depending on characteristics that investors perceive as relevant to the expected policy environment.

This study examines such firm-level heterogeneity in the context of the 2024 U.S. election, which may have changed investors' expectations about the policy regime facing U.S. firms. A political regime change does not only refer to a change in political leadership, but also to a change in expected policy priorities, regulatory enforcement, government support for different industries and firms' relative proximity to political power. The Republican party's 2024 platform explicitly emphasized reduced climate regulation, expanded domestic energy production and the phrase "Drill, Baby, Drill" (Republican National Committee, 2024). Reuters also reported before the election that a second Trump administration was expected to reverse key elements of the Biden administration's climate and energy agenda, including policies affecting fossil fuel production, liquefied natural gas exports and environmental regulations (Volcovici, 2024; Volcovici & Slattery, 2024). At the same time, the election shifted political power toward a Republican administration, meaning that firms' political positioning relative to the incoming government became part of the broader policy environment investors had to interpret. Taken together, these expected changes in policy direction and political power made the 2024 election a setting in which investors could reassess how different firms were positioned under the incoming administration.

2.3 Signaling Theory in Environmental Performance and Political Alignment

2.3.1 Information Asymmetry and Market Signaling

The third theoretical perspective concerns how investors interpret observable firm characteristics when relevant information about firms is incomplete. Signaling theory originates from the problem of information asymmetry, where one party possesses information that another party cannot directly observe (Akerlof, 1970; Spence, 1973). In a capital market setting, this logic is relevant because investors may not be able to observe the full quality, strategy or future exposure of a firm directly. Instead, they rely on observable indicators that may reveal information about firm characteristics and expected positioning.

A signal is meaningful when it helps reduce information asymmetry between the sender and the receiver. For a signal to be credible, it must generally be costly, difficult to imitate or associated with consequences for the sender (Spence, 1973; Connelly et al., 2011). If a signal can be produced easily by all firms regardless of underlying quality, investors have little reason to treat it as informative. By contrast, costly signals can separate firms with genuine underlying characteristics from firms that merely attempt to appear similar.

Signaling theory also emphasizes that signals do not have fixed meanings. The meaning of a signal depends on how receivers interpret it in a specific context (Connelly et al., 2011). A firm action that is interpreted positively in one setting may be interpreted differently when the external environment changes. In financial markets, investors interpret signals by relating them to expectations about future firm performance, exposure and strategic positioning. This makes signaling theory particularly relevant in politically uncertain settings, where the meaning of observable firm characteristics may change as investors reassess which firms are better positioned under a new policy regime.

In corporate finance, signaling theory has been used to explain how firms communicate private information through observable financial and strategic decisions. Ross (1977) argues that capital structure can signal managerial expectations about firm quality, while Myers and Majluf (1984) show how equity issuance may be interpreted by investors as a signal of overvaluation when managers possess superior information. Miller and Rock (1985) similarly argue that dividend decisions can communicate information about firms expected future earnings. All of these applications share the common logic that investors use observable corporate decisions to infer information that is not directly observable.

This logic can also be applied to sustainability and political positioning. Investors cannot perfectly observe a firm's true environmental preparedness, exposure to future regulation or degree of political proximity to an incoming administration. Instead, they rely on observable indicators. In this study, E-scores and political contribution patterns are interpreted as such indicators. E-scores may provide investors with information about firms' environmental positioning, while political contributions may provide information about firms' political orientation and proximity to the expected policy agenda. The relevance of signaling theory therefore differs from the role of the Efficient Market Hypothesis: EMH explains why public information may be incorporated into prices, while signaling theory explains how investors interpret specific firm-level characteristics when forming expectations.

2.3.2 Environmental Performance as a Signal

Corporate investment in environmental sustainability is consistent with the logic of signaling theory, as observable and costly environmental commitments should be interpreted by the market as credible signals of genuine environmental engagement. Empirical evidence suggests that investors do indeed treat environmental performance as such, pricing it through short-term abnormal returns.

Klassen and McLaughlin (1996) provide foundational evidence, finding that third-party environmental award announcements generate significant positive CARs while environmental crises produce significant negative CARs, confirming that investors respond to credible environmental performance signals. Flammer (2013) corroborates these findings across a large sample of US firms from 1980 to 2009, documenting significant positive CARs for environmentally friendly initiatives and negative CARs for environmentally harmful behavior. Importantly, she also demonstrates that this market reaction is context-dependent, as environmental responsibility became increasingly institutionalized, the reward for environmentally friendly signals declined over time, suggesting that the same signal carries different informational content depending on the external environment in which it is received. More recently, Flammer (2021) finds that corporate green bond issuances generate a significant positive CAR of 0.49%, with the reaction being stronger for third-party certified bonds and absent for non-certified bonds. This demonstrates that it is the costly verification process that renders the environmental signal credible to investors.

This could indicate that environmental performance functions as a credible costly signal that investors systematically price through short-term abnormal returns. As established, however, signal interpretation is not fixed. Under a pro-environmental regulatory regime, high environmental performance signals reduced regulatory risk and strategic preparedness, whereas under a less supportive administration the same signal may be reinterpreted as exposure to a policy environment that no longer rewards environmental investment. This context-dependence is central to the present study.

2.3.3 Political Alignment as a Signal

As U.S. election campaigns have become increasingly expensive (Corrado 2005), political contributions have become a channel through which firms and affiliated actors may seek political access, express policy preferences or build political relationships (Ansolabehere et al., 2003; Krumholz, 2013). For the market, corporate political contributions can be understood through the lens of signaling theory. Political donations are observable, measurable and costly, and may therefore provide investors with information about a firm's political orientation, policy preferences and expected exposure to future political decisions. Importantly, this does not require assuming that political donations directly purchase political favors. Ansolabehere et al. (2003) argue that even modest contributions can secure access to policymakers, suggesting that the signal value lies in the observable alignment they reveal rather than their absolute size. Firms may therefore direct contributions toward candidates or parties whose expected policies

are more favorable to their interests, and investors can use these observable patterns to infer which firms are more closely positioned toward the policy priorities of a given administration. Consistent with this interpretation, prior research shows that a firm's political alignment to a party or candidate during an election is associated with measurable financial consequences. Child et al. (2021) find that S&P 500 firms with pre-existing network ties to Trump enjoyed cumulative abnormal returns of approximately 2.3% over the [0,+5] event window following his 2016 election victory. While Child et al. (2021) measure alignment through personal network ties, political donations offer an alternative publicly observable signal through which investors can infer similar proximity to an incoming administration. Akey (2015) finds that firms donating to winning candidates experience a 0.22% increase in CAR per one standard deviation increase in donations, while Jayachandran (2006), also using PAC donation data, shows that firms aligned with the party losing power experience a negative abnormal return of 0.33% for every \$100,000 donated to the losing party. Together these findings suggest that political alignment carries measurable financial value regardless of the channel through which it is observed, and that donations provide investors with a publicly visible signal of that alignment.

Recent evidence has also shown that political alignment can be observed through different contribution channels. Historically, corporate PAC contributions have been the primary data source for studying corporate political activity, partly because disclosure requirements have made this data available since the 1970s and because PACs represented the main permissible channel for corporate campaign contributions before *Citizens United v. FEC* (2010) (Bombardini and Trebbi, 2025). However, employee donations may contain information about a firm's political environment that extends beyond what PAC contributions alone reveal and can be understood through the same signaling logic. Stuckatz (2021) finds that 16.7% of employee donations, across both rank-and-file employees and executives, go to employer PAC supported candidates, with alignment driven by investment-related rather than just ideological motives. This suggests that employee contribution patterns partly reflect the broader political orientation and interests of the firm rather than purely personal preferences and may therefore function as an additional observable signal of a firm's political positioning. While direct event study evidence on the market pricing of employee contributions specifically remains limited, combining corporate and employee contribution patterns can plausibly provide a more complete signal of a firm's political orientation. From a signaling perspective, investors

observing both channels may therefore be better positioned to infer which firms are most closely aligned with, and likely to benefit from, an incoming administration's policy agenda.

2.4 Hypothesis Development

The first hypothesis concerns the relationship between environmental performance and cumulative abnormal returns. Under a policy regime supportive of climate regulation, environmental performance may be valuable because it reduces expected compliance costs, lowers regulatory risk and signals strategic adaptation to a lower-carbon economy. In such a setting, instrumental stakeholder theory and shareholder primacy may lead to similar valuation implications: environmental initiatives can serve stakeholder demands while also supporting shareholder value. The Republican party's 2024 election victory, however, represented a shift toward an expected policy environment characterized by weaker environmental regulation, greater support for fossil-fuel activity and reduced climate-policy support. From a shareholder primacy perspective, investors may place less value on environmental investments when the expected regulatory and policy benefits of such investments decline. Firms with weaker environmental performance may benefit more from reduced regulatory pressure and greater flexibility in how resources are allocated, while firms with stronger environmental performance may have already incurred environmental investments whose expected benefits become less valuable. The relative valuation advantage may therefore shift away from environmental preparedness and toward firms that benefit more directly from deregulation and reduced compliance costs. This logic is consistent with evidence that climate-policy shocks affect stock prices depending on firms' environmental exposure (Ramelli et al., 2021), and with recent evidence that market reactions around the 2024 election differed across firms with different environmental grades (Cosma et al., 2025). This leads to the first hypothesis:

H1: Firms with higher environmental performance experience lower cumulative abnormal returns around the 2024 U.S. election.

The second hypothesis concerns Republican political alignment. If political contribution patterns are interpreted as signals of firms' political positioning, then firms with stronger Republican alignment may be perceived as better positioned under a Republican administration. This does not require assuming that political donations directly purchase political favors. Instead, donations may indicate that firms have directed resources toward political actors whose expected policies are favorable to their interests. In the context of the 2024 election, Republican political alignment may therefore have signaled closer proximity to

the incoming administration's policy priorities, lower political friction, greater policy compatibility or more favorable exposure to the new policy agenda. If investors interpreted Republican alignment in this way, firms with stronger Republican alignment should have experienced more favorable abnormal returns around the election. This expectation is consistent with evidence that political connections and donations to winning candidates can be associated with positive abnormal returns (Goldman et al., 2008; Akey, 2015). This leads to the second hypothesis:

H2: Firms with stronger Republican political alignment experience higher cumulative abnormal returns around the 2024 U.S. election.

The third hypothesis concerns whether political alignment changes the way investors price environmental performance. While H1 predicts that environmental performance becomes less valuable under a Republican administration, this effect may not be equally strong for all firms. As established in Section 2.1, high E-score firms are disproportionately exposed to a deregulatory shock, since the expected financial benefits of their environmental investments depend on a regulatory environment that remains supportive of climate policy.

In this context, Republican alignment among environmentally strong firms may signal to investors a degree of political proximity or compatibility with the incoming administration, regardless of the underlying motivation for those contributions. If investors interpret Republican alignment as indicating that a firm is better positioned to navigate the new policy environment, the negative valuation effect of high environmental performance may be partially offset for firms that also exhibit strong Republican alignment. The negative relationship between environmental performance and abnormal returns is therefore expected to be weaker for firms with stronger Republican political alignment. This leads to the third hypothesis:

H3: Republican political alignment weakens the negative relationship between environmental performance and cumulative abnormal returns around the 2024 U.S. election.

3 Methodology

This chapter describes the empirical methodology used to examine how environmental performance and political alignment are associated with stock market reactions around the 2024 U.S. election. It first presents the empirical strategy, sample construction and variable definitions. It then describes the event study procedure, the cross-sectional regression models and the robustness tests.

3.1 Empirical Strategy

This study uses a two-step empirical strategy to examine how environmental performance and political alignment explain firm-level stock market reactions around the 2024 U.S. election. The first step uses an event study to estimate firm-level cumulative abnormal returns around the election, isolating the part of each firm's stock return that cannot be explained by general market movements. These abnormal returns then serve as the dependent variable in the second and central step of the analysis, a set of cross-sectional regressions that test whether the variation in market reactions across firms is systematically explained by environmental performance, Republican political alignment and the interaction between the two.

3.2 Sample Construction and Data Sources

The sample consists of firms included in the S&P 1500 as of 29 October 2024, the day before the broader main event window begins. The S&P 1500 is used because it provides broad coverage of publicly listed U.S. firms across large-, mid- and small-cap segments (S&P Global, 2026a), while allowing the study to combine stock price data, firm-level accounting variables, ESG measures and political contribution data across a large cross-section of firms. The initial extraction yielded 1,506 unique firms, reflecting index composition changes during the historical price data collection period. Of these, 40 firms are subsequently excluded, 29 due to missing stock prices, 3 due to missing control variables and 8 due to missing explanatory variables, resulting in a baseline event-study sample of 1,466 firms.

Adjusted daily stock prices and index levels are obtained from S&P Capital IQ Pro and are used to calculate firm-level returns and abnormal returns. Environmental scores, firm-level control variables and additional emissions-based variables used in robustness tests are also obtained from S&P Capital IQ Pro. Political contribution data are obtained from OpenSecrets, a nonpartisan nonprofit organisation that compiles and standardises campaign finance

disclosures from U.S. government and state agencies (OpenSecrets, n.d.-b). For each firm in the sample, contribution data were manually downloaded from the OpenSecrets website, covering the 2023-2024 election cycle. The data include both corporate contributions and individual employee contributions, categorized by leaning of the recipient and are used to construct the political alignment measures described in Section 3.3.3. Appendix A describes the OpenSecrets database and data collection procedure, while Appendix B provides definitions, measurements and data sources for all variables.

3.3 Variable Definitions and Data Treatment

3.3.1 Cumulative Abnormal Returns

The dependent variable in the cross-sectional regressions is firm-level CAR over the relevant event window, capturing the portion of a firm's stock price reaction around the election that cannot be explained by general market movements. The calculation of abnormal returns and cumulative abnormal returns is described in Section 3.4.

3.3.2 Environmental Performance

In this study, the E-score is used as the primary explanatory variable. The E-score from S&P Global (2026a) refers to the environmental dimension of S&P Global's ESG scoring framework and is measured on a 0–100 scale, with 100 representing the highest environmental score. It reflects how well a firm manages material environmental issues relative to other firms in the same industry. The score is not based on a single environmental metric, but on underlying environmental questions and indicators that are aggregated into environmental criteria and ultimately into an overall environmental score. Because the scoring methodology is industry-specific, the included environmental issues and their weights may differ across industries. Appendix C provides an illustrative example of how underlying environmental questions contribute to the environmental dimension score within S&P Global's (2026b) methodology.

In the baseline regression models, E-score is used as a continuous variable. As alternative environmental performance proxies, the study also uses reported CO₂ intensity and estimated CO₂ intensity in the robustness analysis. Reported CO₂ intensity is based on firms' disclosed Scope 1 and Scope 2 emissions, measured in metric tons of CO₂, obtained from S&P Capital IQ Pro and scaled by total revenue. Scope 1 emissions refer to direct greenhouse gas emissions from sources owned or controlled by the firm, while Scope 2 emissions refer to first-tier indirect emissions associated with purchased energy consumption (Greenhouse Gas Protocol, 2004). CO₂ intensity is defined as:

$$\text{CO}_2 \text{ Intensity}_i = \frac{\text{Scope 1 emissions}_i + \text{Scope 2 emissions}_i}{\text{Total Revenue in million USD}_i} \quad (1)$$

The measure captures tonnes of CO₂ emissions per million USD of revenue. This is consistent with TCFD guidance recommending Scope 1 and Scope 2 emissions and related intensity metrics to improve comparability across firms (Task Force on Climate-related Financial Disclosures, 2017), and with climate-finance research using emissions-based measures to capture firms' carbon exposure (Trinks et al., 2022; Ilhan et al., 2021; Bolton & Kacperczyk, 2021).

Estimated CO₂ intensity is constructed in the same way, but replaces reported emissions with estimated Scope 1 and Scope 2 emissions obtained from S&P Capital IQ Pro. The estimated measure is included because reported emissions data are not available for all firms. In the sample, reported CO₂ intensity is available for 928 firms, whereas estimated CO₂ intensity is available for 1,474 firms. Relying only on reported emissions would therefore substantially reduce the sample and could introduce selection concerns if firms that disclose emissions differ systematically from firms that do not. However, since estimated emissions are model-based rather than directly disclosed by firms, they may contain measurement error. Estimated CO₂ intensity should therefore be interpreted as a broader but less direct emissions-based measure.

3.3.3 Political Alignment

Political alignment is used to examine whether firms' political positioning is associated with market reactions around the 2024 U.S. election, and whether it moderates the relationship between environmental performance and abnormal returns. The political alignment variables are constructed using political contribution data from OpenSecrets. Since firms may contribute to both Republican and Democratic candidates or committees, the study follows a variable construction from Hutton et al. (2015) which captures the net partisan direction of political contributions. Two continuous measures are constructed: Corporate Political Ideology, CPID, based on corporate political contributions, and Employee Political Ideology, EPID, based on employee political contributions:

$$\text{CPID}_i = \frac{\text{Corporate Republican Contributions}_i - \text{Corporate Democratic Contributions}_i}{\text{Corporate Total Contributions}_i} \quad (2)$$

$$\text{EPID}_i = \frac{\text{Employee Republican Contributions}_i - \text{Employee Democratic Contributions}_i}{\text{Employee Total Contributions}_i} \quad (3)$$

Both measures range from -1 to 1 , where higher values indicate a stronger Republican donation profile and lower values indicate a stronger Democratic donation profile. A value of 1 indicates that all observed contributions are directed to Republican recipients, while a value of -1 indicates that all observed contributions are directed to Democratic recipients³. CPID and EPID are therefore used as proxies for a firm's underlying political alignment, with political donations serving as the observable and measurable channel through which that alignment is inferred. Non-donating firms are included in the main regressions, and are assigned a value of zero, reflecting no observed net partisan contribution-based alignment. Motivating this is the fact that deciding to not donate, in other words being neutral, can be a deliberate corporate strategy.

3.3.4 Control Variables

The regressions include market capitalization, leverage, market-to-book, return on assets, revenue growth and industry fixed effects as control variables. These variables are selected because they may independently affect cumulative abnormal returns around a political event and could otherwise confound the estimated relationships between environmental performance, political alignment and abnormal returns. Market capitalization, measured as the firm's equity market value, controls for firm size since larger and smaller firms may differ in information environment, investor attention and sensitivity to broad market shocks. Leverage, defined as total debt divided by total assets, controls for financial risk and financing constraints, as more highly levered firms may react differently when political news changes expectations about regulation, interest rates, taxation or macroeconomic conditions. Market-to-book, defined as market capitalization divided by book value of equity, captures differences in valuation and growth opportunities, since growth and value firms may respond differently to changes in expected future cash flows and discount rates. Return on assets, defined as net income divided by total assets, controls for profitability, as more profitable firms may be viewed as more resilient to policy uncertainty. Revenue growth, measured as one-year revenue growth, controls for recent operating momentum and expected growth. Industry fixed effects, based on GICS classifications from S&P Capital IQ Pro, are included because environmental performance, political alignment and exposure to Republicans' expected energy, environmental and regulatory agenda are likely to vary systematically across industries.

³ We also tested H2 and H3 on an alternative measure based on Hutton et al. (2014) in which the political alignment is a measure of Republican contributions divided by total contributions. We do not present the results, as it was nearly identical to the main results presented in 5.2 and 5.3.

The choice of controls is also consistent with closely related studies in this setting. Ramelli et al. (2021) use market cap, profitability, growth, leverage and industry fixed effects when examining stock-price reactions to climate-policy shocks, and Cosma et al. (2025) adopt a similar set of controls when examining environmental performance and market reactions around the 2024 election. All control variables are measured on 29 October 2024, the day before the broader main event window begins, or on the closest prior reporting date available. To reduce the influence of extreme observations, the continuous control variables, except logged market capitalization, are winsorized at the 1st and 99th percentiles (Leone et al., 2019).

3.4 Event Study Procedure

3.4.1 Event Date and Event Window

The event study procedure is used to construct firm-level abnormal returns around the 2024 election by comparing realized returns with estimated normal returns (MacKinlay, 1997). This approach is appropriate because the election outcome represents a clearly identifiable political event that changed investors' expectations about future policy and regulation, and because under semi-strong market efficiency, such public information should be reflected in stock prices (Fama, 1970).

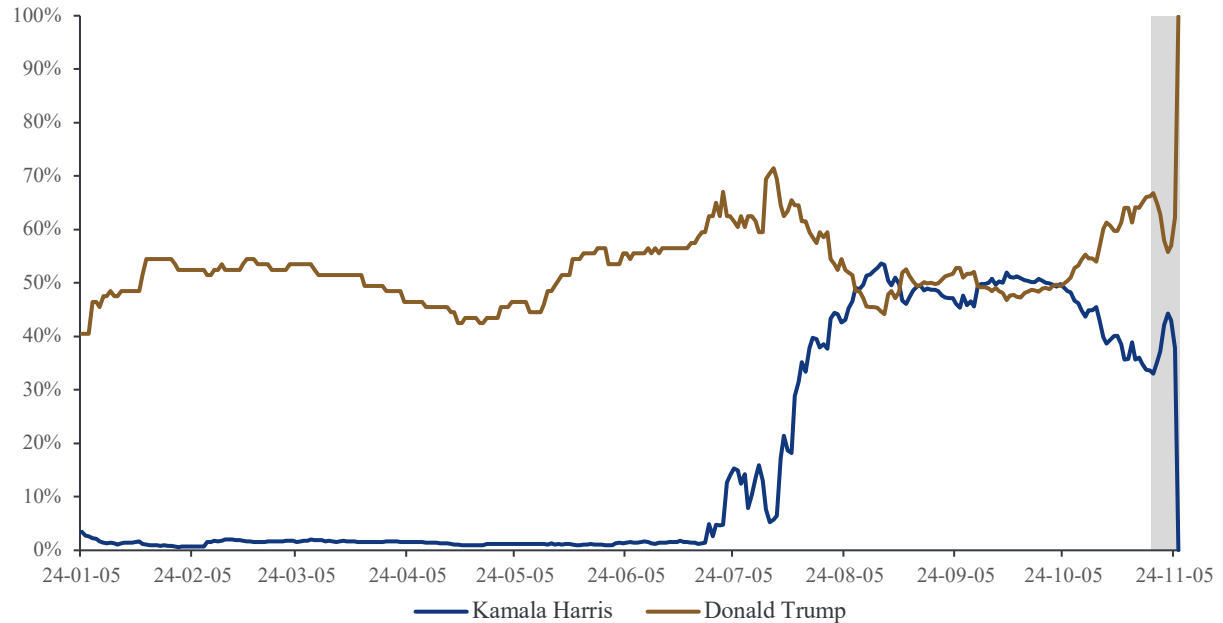
The event date, t_0 , is set to 6 November 2024, the first trading day after the election outcome became known, since the result was confirmed after U.S. markets had closed on election day. The study uses two main event windows. The first is the event-day window $[0,0]$, which captures the immediate market reaction. The second is the broader $[-5,+5]$ trading-day window, beginning on 30 October 2024 and ending on 12 November 2024. The event-day window captures immediate repricing, while the broader window allows for both anticipatory information effects and delayed price adjustment (MacKinlay, 1997).

The inclusion of pre-election trading days is further motivated by prediction market data from Polymarket (2026). As shown in Error! Reference source not found., Trump's implied probability of winning was already elevated at the beginning of the event window, suggesting that investors may have begun adjusting to the possibility of a Trump and republican victory before election day. A wider event window is therefore appropriate, as it allows the analysis to account for both anticipation effects before the event and possible delayed market adjustment after the event. At the same time, extending the window further would increase the risk of contamination from unrelated firm-specific or macroeconomic news. In addition, alternative

event windows are used in the robustness analysis to assess whether the results are sensitive to the chosen window length.

Figure 2. Implied election winning probabilities for Donald Trump and Kamala Harris, 2024.

Note: The shaded area denotes the main event window $[-5, +5]$ around the event date, 6 November 2024. Source: Polymarket (2026).



Normal returns are estimated over a 250-trading-day estimation window ending 22 trading days before the start of the broader event window. This gap reduces the risk that information leakage or anticipation effects related to the election influence the estimation of normal returns. The use of a 250-day estimation window with a pre-event buffer is also consistent with recent U.S. election studies (Ahmed et al., 2025; Cosma et al., 2025).

3.4.2 Estimation of Abnormal Returns

To estimate abnormal returns, normal returns are first defined. Daily stock returns are calculated as simple returns:

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \quad (4)$$

where $P_{i,t}$ is the adjusted closing price of stock i on day t . Market returns are calculated in the same way using the benchmark index.

Normal returns are estimated using the market model. As described by MacKinlay (1997), the model specifies the expected return of stock i at time t as a linear function of the market return and the stock's sensitivity to market movements. The market model is used because it adjusts for general market movements when estimating abnormal returns:

$$R_{i,t} = \hat{\alpha}_i + \hat{\beta}_i \times R_{m,t} + \varepsilon_{i,t} \quad (5)$$

Where $R_{i,t}$ is the return on stock i on day t , $R_{m,t}$ is the market return, and $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated using ordinary least squares over the estimation window. In the baseline market model, $R_{m,t}$ is measured using the Russell 3000 index, which provides broad coverage of the U.S. equity market across large-, mid- and small-cap firms (FTSE Russell, 2026).

Abnormal returns are calculated as the difference between actual and expected returns:

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i \times R_{m,t}) \quad (6)$$

Abnormal returns therefore measure the portion of stock returns that cannot be explained by general market movements. To assess the average market reaction across all firms in the sample, average abnormal returns are computed for each day in the event window as:

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{i,t} \quad (7)$$

For each firm, cumulative abnormal returns over an event window are computed as:

$$CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{i,t} \quad (8)$$

The firm-level *CAR* is the dependent variable used in the cross-sectional regressions.

As a preliminary event-study assessment, one-sample t-tests are used to examine whether *AARs* and *CARs* differ significantly from zero. These tests describe the aggregate market reaction around the election, while the cross-sectional regressions in Section 3.5 test whether firm characteristics explain variation in abnormal returns.

3.5 Cross-Sectional Regression Models

To examine whether the market reaction to the result of the 2024 election varied systematically across firms, firm-level *CAR* is used as the dependent variable in cross-sectional regressions. This approach is standard in event-study settings where abnormal returns are regressed on firm characteristics to explain cross-sectional differences in stock price reactions to a common event (Kothari & Warner, 2007). All regressions are estimated using ordinary least squares. Because the variance of the regression error may differ across firms, all models are estimated with heteroskedasticity-robust standard errors (White, 1980). To facilitate coefficient interpretation,

E-score is divided by 10 in all regressions, while market-to-book, return-on-assets and revenue growth are divided by 100.

3.5.1 Environmental Performance

The baseline specification tests whether firms' environmental performance is associated with abnormal returns around the 2024 U.S. election. The model is specified as follows:

$$CAR_i(t_1, t_2) = \alpha + \beta_1 EScore_i + \gamma X_i + \varepsilon_i \quad (9)$$

where $CAR_i(t_1, t_2)$ is the cumulative abnormal return for firm i over the event window, $EScore_i$ measures environmental performance, and X_i is a vector of firm-level control variables and industry fixed effects. The coefficient β_1 captures the association between environmental performance and abnormal returns, conditional on the included controls. Based on H1, β_1 is expected to be negative.

3.5.2 Political Alignment Model

The second specification tests whether the degree of Republican political alignment is associated with abnormal returns around the 2024 U.S. election. Political alignment is measured using the continuous CPID and EPID variables:

$$CAR_i(t_1, t_2) = \alpha + \beta_1 CPID_i + \gamma X_i + \varepsilon_i \quad (10)$$

$$CAR_i(t_1, t_2) = \alpha + \beta_1 EPID_i + \gamma X_i + \varepsilon_i \quad (11)$$

where $CPID_i$ and $EPID_i$ capture the net Republican orientation of corporate and employee political contributions, respectively, and X_i is a vector of firm-level control variables and industry fixed effects. The coefficient β_1 captures the association between Republican political alignment and abnormal returns, conditional on the included controls. Based on H2, β_1 is expected to be positive.

3.5.3 Interaction Model

The third specification tests whether Republican political alignment moderates the relationship between environmental performance and abnormal returns. To facilitate interpretation, E-score is mean-centered before constructing the interaction term. The models are specified separately using CPID and EPID:

$$CAR_i(t_1, t_2) = \alpha + \beta_1 EScoreCentered_i + \beta_2 CPID_i + \beta_3 (EScoreCentered_i \times CPID_i) + \gamma X_i + \varepsilon_i \quad (12)$$

$$CAR_i(t_1, t_2) = \alpha + \beta_1 EScoreCentered_i + \beta_2 EPID_i + \beta_3 (EScoreCentered_i \times EPID_i) + \gamma X_i + \varepsilon_i \quad (13)$$

The coefficient β_1 captures the association between environmental performance and abnormal returns when political alignment equals zero, while the β_2 captures the association between political alignment and abnormal returns at the average level of environmental performance. The interaction coefficient β_3 shows whether the relationship between environmental performance and abnormal returns changes as firms become more strongly Republican. Based on H3, β_3 is expected to be positive.

3.5.4 Regression Diagnostics

Before estimating the cross-sectional regressions, several diagnostic tests are conducted to assess whether the OLS assumptions are satisfied. The diagnostics are conducted on the main specifications of H1 and H2, with CAR [0,0] as our dependent variable. First, although all regressions are estimated with heteroskedasticity-robust standard errors, the White (1980) test is conducted as a diagnostic check to assess whether heteroskedasticity is present. Second, multicollinearity is assessed using variance inflation factors, with industry dummies excluded from the calculation to avoid mechanical inflation arising from the dummy variable construction. Third, normality of residuals is examined using a skewness and kurtosis test. Lastly, a Pearson correlation matrix is also presented to provide an overview of bivariate relationships between all variables. The results are presented alongside the descriptive statistics in section 4.2.

3.6 Robustness Tests

3.6.1 Robustness of Abnormal Return Measurement

The first set of robustness tests examines whether the results are sensitive to how abnormal returns are measured. Since the dependent variable in the cross-sectional regressions is firm-level CAR, the main findings could be affected by choices made in the event-study procedure, including the length of the event window, the model used to estimate normal returns and the market benchmark used to capture general market movements.

First, the analysis is repeated using alternative event windows around t_0 . While the main specifications use the [0,0] and [-5,+5] windows, the analysis is repeated using [-3,+3] and [-5,-1]. The [-3,+3] window reduces the risk of contamination from unrelated firm-specific or macroeconomic information compared to the [-5,+5] window, while the [-5,-1] window provides a cleaner examination of potential anticipatory pricing.

Second, abnormal returns are re-estimated using a market-adjusted return model instead of the baseline market model. In this specification, expected returns are set equal to the market return on the same day, without estimating firm-specific alpha and beta parameters (MacKinlay, 1997):

$$AR_{i,t}^{MA} = R_{i,t} - R_{m,t} \quad (14)$$

This provides a robustness check of whether the results depend on the normal-return model used to construct abnormal returns.

Third, the analysis is repeated using alternative market benchmarks. Since abnormal returns are calculated relative to a benchmark index, re-estimating the analysis with alternative benchmarks provides an additional check that the results are not driven by the specific market proxy used in the baseline event study. The alternative benchmarks are the S&P 500, S&P 1500, Russell 1000, Russell 2000 and MSCI World Index.

3.6.2 Robustness of Variable Definitions

The second set of robustness tests examines whether the results are sensitive to how the key explanatory variables are operationalized. Since both environmental performance and political alignment can be measured in several ways, the analysis uses alternative variable definitions. For environmental performance, the regressions are re-estimated using reported CO₂ intensity and estimated CO₂ intensity. These measures provide narrower and more directly observable proxies for environmental performance than the broader E-score.

CPID can be calculated for 520 firms, while EPID can be calculated for 1,182 firms. In the main regression analysis, non-contributing firms are included and assigned a value of zero, reflecting no observed net partisan contribution-based alignment. However, this coding choice may affect the interpretation of the political alignment variables, since a value of zero can represent either a balanced contribution profile among contributing firms or the absence of observed political contributions. As a robustness test, the regressions are therefore re-estimated after excluding non-contributing firms. This allows the analysis to assess whether the main results are sensitive to retaining firms without observed political contribution data, and whether the estimated relationship is driven by firms with observable political activity rather than by the coding of non-contributors.

Finally, the regressions are re-estimated using two-digit SIC-code industry classifications. This provides an additional check that the results are not driven by one specific way of capturing industry heterogeneity.

3.6.3 Robustness of Statistical Inference

The robustness of statistical inference is examined using two additional approaches. First, since some firms may exhibit unusually large abnormal returns around the election, the main regressions are re-estimated using firm-level CAR winsorized at the 1st and 99th percentiles. This specification is treated as supplementary rather than as the baseline design, since winsorization relies on researcher-selected cutoffs and may alter legitimate observations (Leone et al., 2019). Second, the robustness of regression inference is also assessed using industry-clustered standard errors. The baseline regressions use heteroskedasticity-robust standard errors, while clustered standard errors allow regression errors to be correlated within industries. This is relevant because firms in the same industry may respond similarly to the election shock or share unobserved industry-specific characteristics (Moulton, 1986).

3.6.4 Selection Bias and Observable Confounding

A potential concern with our baseline results is that firms with high environmental scores or strong political alignment may differ systematically from other firms along observable dimensions not fully captured by the regression controls, potentially biasing our estimates. To provide a robustness test for this concern, we employ propensity score matching (PSM) following Roberts and Whited (2013), creating a matched comparison group based on firm size and industry and re-estimating our baseline model on the matched subsample. Propensity scores are estimated via logistic regression of treatment status on log market capitalisation and industry fixed effects. We present PSM with replacement as our primary specification, as matching with replacement allows for better matches and reduces bias (Roberts & Whited, 2013), and caliper matching with exact industry constraints as an alternative conservative specification.

The classification of firms is motivated by each research question. For E-score, firms in the top and bottom terciles are classified as green and brown respectively, with the middle tercile dropped to create a clean contrast, using 1:1 nearest neighbour matching. For EPID and CPID, firms in the top group are classified as Republican-leaning and all remaining firms as non-Republican, using 1:2 nearest neighbour matching given the non-Republican group is approximately 2.7 times larger. A tercile split is used for EPID, while CPID requires a quartile

split due to the mass point at zero in its distribution, which would otherwise classify neutral non-donors as Republican-leaning.

4 Descriptive Statistics and Preliminary Analysis

This chapter presents descriptive statistics and preliminary patterns in the data before the regression analysis in Chapter 5. The purpose is to describe the sample, examine the distribution of the main variables, and identify bivariate relationships and diagnostic patterns that may help interpret the regression results.

4.1 Descriptive Statistics

Table reports descriptive statistics for the variables used in the empirical analysis.

Table 1. Descriptive statistics for the main variables.

Note: Market capitalization, CO₂ intensity and estimated CO₂ intensity are logarithmically transformed. Market-to-book, leverage, return on assets and revenue growth are winsorized at the 1st and 99th percentiles.

Variables	N	Mean	SD	Min	Median	Max
Car [-5,+5]	1466	0.016	0.105	-0.869	0.023	0.494
Car [0,0]	1466	0.014	0.055	-0.370	0.011	0.390
E-score	1466	32.550	18.737	0	31	99
Log Market Cap	1466	9.050	1.498	6.141	8.812	15.068
Market-to-Book	1466	4.650	10.478	-34.419	2.518	64.245
Leverage	1466	0.312	0.220	0.002	0.296	1.043
Return-on-Assets	1466	5.450	5.258	-9.527	4.502	24.336
Growth	1466	5.720	19.735	-56.368	4.473	95.367
CPID	1466	0.073	0.306	-1	0	1
EPID	1466	-0.166	0.553	-1	-0.113	1
Log CO ₂ Intensity	922	3.180	1.843	0	3.010	8.521
Log Estimated CO ₂ Intensity	1461	3.270	1.700	0	3.240	8.600

The dependent variables indicate a positive average market reaction around the election. Mean CAR is 1.4% in the event-day window [0,0] and 1.6% in the broader [-5,+5] window, while the medians are also positive at 1.1% and 2.3%. This suggests that the average firm experienced positive abnormal returns around the 2024 election. However, the broader window shows substantially greater dispersion, with a standard deviation of 10.5% compared to 5.5% for [0,0]. This is consistent with the [-5,+5] window capturing both anticipation effects and post-election adjustment, whereas [0,0] captures the immediate market reaction.

The main environmental performance measure, E-score has a mean of 32.6 and a median of 31. This suggests that the average firm in the sample has a relatively modest environmental score. At the same time, the standard deviation of 18.7 points and the range from 0 to 99 indicate substantial cross-sectional variation, providing meaningful dispersion for examining whether environmental performance is associated with abnormal returns.

The political alignment measures also show important differences in coverage and distribution. CPID has a mean of 0.07 and a median of 0, indicating mild Republican leaning on average and a mass point at zero. EPID has a mean of -0.166 and a median of -0.113 , indicating that employee contributions lean Democratic on average.

The remaining control variables indicate substantial variation in firm characteristics. The market-to-book ratio exhibits a mean of 4.67 and a median of 2.52, with a wide range from -34.4 to 64.2. This suggests that some firms have substantial growth expectations relative to book value, while the negative minimum reflects firms with negative book equity. Leverage has a mean of 0.312 and a median of 0.296, indicating moderate debt usage across the sample. ROA has a mean of 5.45% and a median of 4.50%, suggesting that the average firm is profitable, although the range from -9.5% to 24.3% indicates meaningful variation in operating performance. Revenue growth has a mean of 5.7% and a standard deviation of 19.7%, pointing to considerable dispersion in recent growth trajectories. Logged market capitalization has a mean of 9.045 and ranges from 8.81 to 13.07, indicating variation in firm size within the S&P 1500 sample.

Table presents summary statistics by industry, including mean E-score CPID and EPID, as well as median and mean CAR for both main event windows. Several patterns are worth noting. Materials, Consumer Staples, Real Estate and Utilities have the highest mean E-scores, while Financials, Media and Entertainment, and Health Care have the lowest mean E-scores. The CAR patterns also indicate substantial cross-industry variation in market reactions. Over the broader $[-5,+5]$ window, Energy has the highest mean and median CAR, at 6.5% and 7.3%, respectively, while Real Estate and Information Technology have the most negative mean CARs, at -3.0% and -2.3% . On the event day, Financials and Energy display the highest mean CARs, at 5.8% and 4.5%, respectively, while Real Estate and Consumer Staples have the most negative mean CARs, at -2.8% and -1.0% . These patterns are descriptive and should be interpreted cautiously, but they highlight the importance of controlling for industry fixed effects in the regression analysis.

Table 2. Industry-level summary statistics

Note: Observed CPID and EPID report the number of firms with observed corporate and employee political contribution data within each industry, respectively. Percentages in parentheses refer to each industry's share of the total number of firms with observed CPID or EPID data. Furthermore, to enable better formatting of the given table, industry names are shortened: Comm. Services = Communication Services. Consumer Disc. = Consumer Discretionary. Information Tech. = Information Technology. Media and Enter. = Media and Entertainment

Industry	N	Observed CPID	Observed EPID	Mean			CAR [-5,+5]		CAR [0,0]	
				E-score	CPID	EPID	Mean	Median	Mean	Median
Comm. Services	11	6 (1.1%)	10 (0.8%)	30.2	0.061	-0.443	0.012	-0.015	0.027	0.016
Consumer Disc.	193	58 (11.2%)	153 (12.9%)	31.1	0.076	-0.190	0.013	0.004	-0.009	-0.005
Consumer Staples	75	26 (5%)	57 (4.8%)	40.0	0.080	-0.227	0.001	0.009	-0.01	-0.007
Energy	66	27 (5.2%)	51 (4.3%)	36.8	0.300	0.294	0.065	0.073	0.045	0.038
Financials	256	111 (21.3%)	210 (17.8%)	23.2	0.079	-0.136	0.046	0.051	0.058	0.062
Health Care	163	68 (13.1%)	133 (11.3%)	27.6	0.045	-0.318	0.007	0.010	0.002	-0.003
Industrials	246	90 (17.3%)	209 (17.7%)	34.7	0.084	-0.087	0.046	0.040	0.024	0.022
Information Tech.	184	33 (6.3%)	141 (11.9%)	35.3	-0.009	-0.390	-0.023	-0.009	0.003	0.004
Materials	75	34 (6.5%)	67 (5.6%)	44.9	0.121	0.069	-0.010	0.000	0.01	0.004
Media and Enter.	37	12 (2.3%)	31 (2.6%)	25.2	-0.024	-0.430	0.020	0.030	0.015	0.011
Real Estate	101	7 (1.3%)	67 (5.6%)	39.0	-0.025	-0.050	-0.030	-0.017	-0.028	-0.028
Utilities	59	48 (9.2%)	53 (4.5%)	38.1	0.235	-0.153	-0.002	0.001	-0.007	-0.009
Total	1466	520 (100%)	1182 (100%)	32.5	0.073	-0.166	0.016	0.023	0.014	0.011

The political alignment measures also reveal industry-level heterogeneity. Energy firms exhibit the strongest Republican alignment under both CPID and EPID, with mean values of 0.3 and 0.294, respectively. Real Estate has the strongest Democratic alignment under CPID, with a mean of -0.025 , while Communication Services and Media and Entertainment have the strongest Democratic orientation under EPID, with mean values of -0.443 and -0.430 , respectively. This cross-industry variation suggests that political alignment is not evenly distributed across sectors, reinforcing the importance of accounting for industry differences when examining the relationship between political alignment, environmental performance and abnormal returns.

4.2 Preliminary Analysis

Table presents the Pearson correlation matrix for the variables used in the regression analysis. The correlation between the two CAR measures is positive and statistically significant at 0.521, indicating that firms with more favourable event-day reactions also tended to have more favourable cumulative reactions over the broader event window. At the same time, the correlation is far from perfect, suggesting that the two measures capture related but not identical aspects of the market reaction.

Table 3. Pearson correlation matrix for regression variables.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) CAR [-5,+5]	1.000					
(2) CAR [0,0]	0.521***	1.000				
(3) E-score	-0.159***	-0.266***	1.000			
(4) CPID	0.054**	0.095***	0.023	1.000		
(5) EPID	0.063**	0.123***	-0.128***	0.251***	1.000	
(6) Log Market Cap	-0.118***	-0.209***	0.522***	0.058**	-0.114***	1.000
(7) Market-to-Book	-0.003	-0.076***	0.050*	-0.032	-0.062**	0.214***
(8) Leverage	-0.120***	-0.307***	0.169***	0.017	0.002	0.006
(9) Return-on-Assets	-0.026	-0.149***	0.113***	-0.010	-0.017	0.279***
(10) Growth	-0.027	-0.006	-0.096***	-0.048*	-0.027	0.093***
(11) Log CO ₂ Int.	0.007	0.020	0.093***	0.197***	0.235***	-0.064*
(12) Log Est. CO ₂ Int.	-0.037	-0.108***	0.119***	0.176***	0.168***	-0.044*
	(7)	(8)	(9)	(10)	(11)	(12)
(7) Market-to-Book	1.000					
(8) Leverage	-0.045*	1.000				
(9) Return-on-Assets	0.172***	0.112***	1.000			
(10) Growth	0.062**	-0.097***	0.155***	1.000		
(11) Log CO ₂ Int.	-0.125***	0.229***	-0.046	-0.138***	1.000	
(12) Log Est. CO ₂ Int.	-0.078***	0.226***	0.022	-0.095***	0.956***	1.000

*** p<0.01, ** p<0.05, * p<0.1

The correlations provide preliminary evidence consistent with the expected relationship between environmental performance and abnormal returns. E-score is negatively correlated with both CAR [-5,+5] and CAR [0,0], with correlations of -0.159 and -0.266 respectively, both statistically significant at the 1% level. This indicates that firms with higher environmental scores tended to experience lower abnormal returns around the election, particularly on the event day. This pattern is consistent with the direction of H1, although the correlation does not account for firm characteristics or industry fixed effects.

The political alignment variables show the opposite pattern. CPID is positively correlated with both CAR [-5,+5] and CAR [0,0], with correlations of 0.054 and 0.095 respectively. EPID is also positively correlated with both CAR measures, with correlations of 0.063 for CAR [-5,+5] and 0.123 for CAR [0,0]. These correlations suggest that firms with more Republican oriented corporate and employee donation profiles tended to experience more favourable market reactions, especially on the event day. This is directionally consistent with H2 but should be interpreted as descriptive evidence only.

Several control variables are also correlated with abnormal returns. Log market capitalization is negatively correlated with both CAR [-5,+5] and CAR [0,0], indicating that larger firms tended to experience lower abnormal returns around the election. Leverage is also negatively correlated with both CAR measures, with a particularly strong correlation of -0.307 with CAR

[0,0]. ROA and market-to-book are negatively correlated with CAR [0,0], while their correlations with CAR [-5,+5] are weaker. These patterns suggest that firm characteristics are related to market reactions and motivate their inclusion as controls in the regression analysis.

Furthermore, CPID and EPID are positively correlated at 0.251, indicating that corporate and employee political contributions capture related but distinct dimensions of political alignment. E-score is negatively correlated with EPID at the 1% level, but not significant for CPID. This difference may be due to the large number of neutral firms in CPID. Nevertheless, it suggests that firms with stronger Republican alignment tend to have somewhat lower environmental scores. Log market capitalization is positively correlated with E-score at 0.522, indicating that larger firms tend to have higher environmental scores. The highest correlation is between logged reported CO₂ intensity and logged estimated CO₂ intensity, at 0.956, which is expected since the two variables measure closely related emissions-based constructs and are not used simultaneously in the regressions. Overall, the correlation matrix does not indicate severe multicollinearity among the main explanatory variables used in the baseline models.

Regression diagnostics are also conducted on the main models used in H1 and H2. The White test in Appendix D **Table D1** confirms the presence of heteroskedasticity by rejecting the null hypothesis of homoskedasticity, motivating the use of robust standard errors throughout the H1 and H2 specifications. The VIF test, shown in **Table D2**, indicates low levels of multicollinearity, with no variable exceeding the common threshold of 5, indicating no necessity to exclude any variable. Notably, the highest VIF is exhibited by Market Capitalization and E-score, with values of 1.58 and 1.47 respectively. Finally, the results of the skewness and kurtosis test are shown in **Table D3** and rejects normality of the residuals ($p = 0.000$), consistent with the well-documented non-normality of financial returns (Fama, 1965). Given the large sample size, this does not pose a concern for the validity of our estimates.

4.3 Preliminary Event-Study Evidence

This section presents preliminary event-study evidence before turning to the cross-sectional regression analysis. The purpose is to describe the aggregate market reaction around the 2024 U.S. election, rather than to test the study's hypotheses.

Table reports daily average abnormal returns (AAR) over the [-5,+5] event window. The aggregate market reaction was not concentrated only on the event day, although the largest daily abnormal return occurs at t_0 . The event-day AAR is significant at 1.38 percent,

suggesting a strong positive immediate reaction when the election outcome became known. Several pre-election days also exhibit significant positive abnormal returns, including 0.55 percent on t_{-4} and t_{-2} . After the event day, the pattern becomes more mixed. The average abnormal return is significantly negative on t_{-1} significantly positive again around t_{-3} , and significantly negative on t_4 and t_5 . This pattern suggests that the market reaction involved both immediate repricing and subsequent adjustment.

Table 4. Daily average abnormal returns (AAR) over the [-5,+5] event window.

Event day	AAR (%)	SD (%)	N
-5	0.19**	2.964	1466
-4	0.55***	3.186	1466
-3	-0.11	2.828	1466
-2	0.55***	2.013	1466
-1	0.21***	2.568	1466
0	1.38***	5.471	1466
1	-0.85***	3.710	1466
2	0.05	3.184	1466
3	0.70***	2.605	1466
4	-0.66***	1.940	1466
5	-0.38***	2.092	1466

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The daily AARs reported in **Table** are plotted in **Figure 3** to provide a visual representation of abnormal return developments throughout the main event window.

Figure 3. Daily average abnormal returns (AAR) over the [-5,+5] event window.

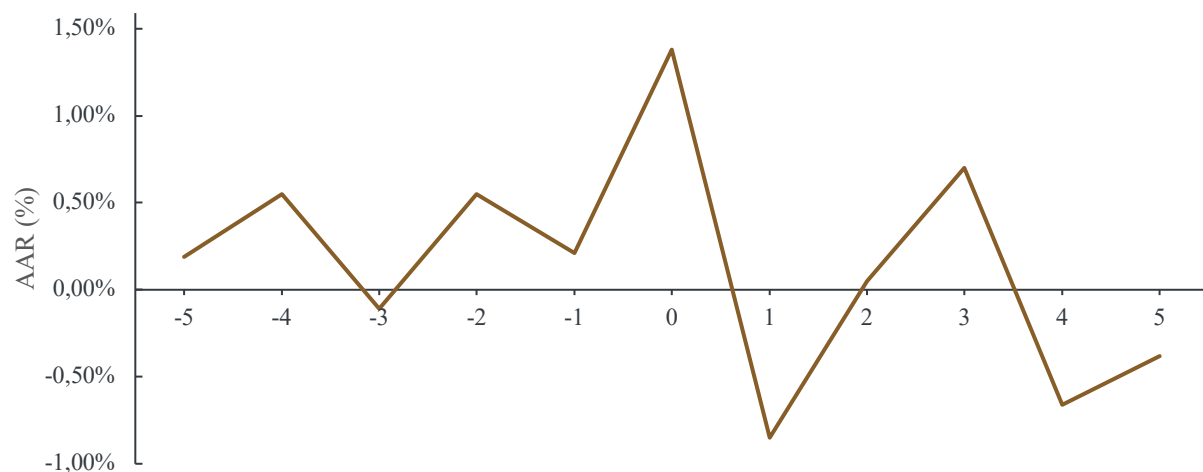


Table 5 provides preliminary descriptive evidence by comparing mean CARs across groups based on environmental performance and political alignment. Firms in the highest E-score tercile have lower mean CARs than firms in the lowest E-score tercile in both event windows, and the differences are statistically significant. This provides an initial indication that firms with stronger environmental performance underperformed around the election.

For political alignment, Republican-leaning firms, defined as firms with CPID or EPID above zero, display higher event-day CARs than non-Republican firms. The difference is statistically significant for both CPID and EPID in the [0,0] window, while the broader [-5,+5] differences are smaller and statistically insignificant.

Table 5. Mean CAR by environmental performance and political alignment groups.

Note: Differences are tested using independent-sample t-tests.

Group	N	Mean CAR [0,0]	Mean CAR [-5+5]
Environmental performance (E-score)			
High E-score (top tercile)	467	-0.001	-0.003
Low E-score (bottom tercile)	500	0.033	0.038
Difference		-0.034***	-0.041***
CPID			
Republican-leaning (CPID > 0)	392	0.019	0.015
Non-Republican (CPID ≤ 0)	1,074	0.012	0.017
Difference		0.007**	-0.003
EPID			
Republican-leaning (EPID > 0)	401	0.022	0.019
Non-Republican (EPID ≤ 0)	1,065	0.011	0.015
Difference		0.011***	0.005

*** p<0.01, ** p<0.05, * p<0.1

5 Main Results and Discussion

This chapter presents the cross-sectional regression results used to test the study's hypotheses. The analysis proceeds in three steps. First, the chapter examines whether environmental performance is associated with cumulative abnormal returns. Second, it tests whether the degree of Republican political alignment is associated with abnormal returns. Third, it examines whether Republican political alignment moderates the relationship between environmental performance and abnormal returns.

5.1 Environmental Performance and Cumulative Abnormal Returns

5.1.1 Main Results

This section examines whether firms' environmental performance is associated with abnormal returns around the 2024 U.S. election. Hypothesis 1 predicts that firms with higher environmental performance experience lower abnormal returns, reflecting the expectation that investors reassessed the value of environmental performance under a political regime associated with weaker environmental regulation and greater support for fossil-fuel-related activity. **Table** presents the regression results.

Table 6. OLS regressions of abnormal returns on E-score and control variables.

Variables	CAR [0,0]	CAR [-5,+5]
E-score	-0.003*** (0.001)	-0.005*** (0.002)
Log Market Cap	-0.005*** (0.001)	-0.004* (0.002)
Market-to-Book	-0.010 (0.011)	0.036 (0.030)
Leverage	-0.039*** (0.007)	-0.034** (0.014)
Return-on-Assets	-0.048 (0.030)	-0.015 (0.063)
Growth	-0.009 (0.008)	-0.022 (0.020)
Constant	0.081*** (0.009)	0.084*** (0.027)
Observations	1466	1466
Adjusted R-squared	0.289	0.089
Standard errors	Robust	Robust
Industry fixed effects	Yes	Yes

Robust standard errors are in parentheses

**** $p < .01$, ** $p < .05$, * $p < .1$*

The coefficient on E-score is negative and statistically significant across both main event windows. In the event-day specification $[0,0]$, the coefficient is approximately -0.003 ($p < 0.01$), indicating that a ten-point increase in E-score is associated with a 0.3 percentage points lower abnormal return on the first trading day following the election. In the broader $[-5,+5]$ window, the coefficient increases in magnitude to approximately -0.005 ($p < 0.01$), meaning that a ten-point increase in firms' environmental score yields a 0.5 percentage points lower CAR. Economically, the effect is meaningful. Given the sample E-score standard deviation of approximately 18.8 points, the $[-5,+5]$ estimate implies that a one-standard-deviation increase in environmental performance is associated with roughly a 0.94 percentage point reduction in CAR. Consequently, these findings provide strong empirical support for H1.

From a theoretical perspective, the findings provide strong empirical validation for the shareholder primacy framework under conditions of political regime shifts. When a political shock signals massive environmental deregulation, such as Trump's pledged fossil-fuel expansion and opposition to climate policies, the expected marginal financial benefits of maintaining high environmental preparedness diminish significantly. In this setting, investors appear to re-evaluate high E-scores not as strategic assets, but as legacy costs or discretionary capital expenditures that yield insufficient financial returns in the altered political climate. This re-evaluation is consistent with signalling theory, where the informational content of an environmental signal depends on how investors interpret it under prevailing conditions. Under a pro-environmental regulatory regime, a high E-score signals reduced regulatory risk and strategic preparedness, whereas under a less supportive administration the same signal may be reinterpreted as exposure to a policy environment that no longer rewards environmental investment. Conversely, the results expose the boundaries of instrumental stakeholder theory during acute political shocks. While stakeholder theory posits that high environmental performance generates long-term value by fostering regulatory goodwill and mitigating non-financial risks, this protective mechanism is effectively neutralized when the incoming administration actively targets and dismantles environmental oversight.

The result also adds an important boundary condition to the broader ESG literature, which generally links sustainability characteristics to favourable financial outcomes through valuation, risk reduction or resilience channels (Friede et al., 2015; Flammer, 2015; Albuquerque et al., 2019; Lins et al., 2017; Abedifar et al., 2022). The negative E-score coefficient suggests that environmental performance is not priced uniformly across political contexts, but conditionally on the expected policy environment. This is consistent with climate-

policy shock evidence showing that political shifts can trigger equity-market repricing of firms' environmental characteristics (Ramelli et al., 2021; Cosma et al., 2025). The interpretation is further supported by the signalling literature, where Klassen and McLaughlin (1996) and Flammer (2021) show that investors do reward credible environmental signals, while Flammer (2013) demonstrates that the value of such signals shifts as the external environment changes. The negative E-score coefficient documented here extends this context dependence to the political and regulatory dimension, suggesting that under a less supportive administration, the same environmental signal is reinterpreted as exposure to a policy environment that no longer rewards environmental investment.

The finding is also informative in relation to Ramelli et al. (2021). Following Trump's 2016 election, they document an initial negative reaction for climate responsible firms that was subsequently reversed, consistent with investors interpreting the anti-environmental policy shock as partly transitory. In contrast, the present results show a negative association between E-score and abnormal returns not only on the event day but also over the broader $[-5,+5]$ window. While this does not prove that the market viewed the 2024 policy shift as permanent, it suggests that investors did not price environmental performance as a short-term resilience factor in this setting. One possible interpretation is that Trump's 2024 victory was perceived as a more credible deregulatory regime shift than in 2016, given investors' experience with his first administration and the expected Republican control of the executive and legislature.

Finally, the control variables provide some additional context. Leverage is negatively associated ($p<0.01$) with CAR in the main specification, suggesting that investors might have preferred less financially constrained firms during the uncertainty of the election. Market capitalization is also negative ($p<0.1$ for $[-5,+5]$ and $p<0.01$ for $[0,0]$), indicating that smaller firms experienced relatively stronger abnormal returns. However, these controls are not the focus of the analysis and are included primarily to ensure that the estimated E-score relationship is not driven by observable firm characteristics.

5.1.2 Robustness of Environmental Performance Results

The baseline negative E-score finding remains highly robust across several alternative specifications presented in **Appendix D**. First, the relationship holds when using an alternative $[-3,+3]$ event window, whereas a statistically insignificant coefficient in the pre-election window $[-5,-1]$ confirms the absence of a pre-event trend (**Table D4**). Second, the results are insensitive to the choice of market benchmark, remaining stable when re-estimating CAR using

the S&P 500, S&P 1500, MSCI World, Russell 1000, and Russell 2000 (**Table D5**). Third, the finding is robust to alternative modeling choices, including a market-adjusted return model, 1st and 99th percentile CAR winsorization, industry-clustered standard errors, and alternative industry fixed effects (**Table D6**).

Two complementary tests provide further nuance. Substituting the E-score with reported and estimated CO₂ intensity reveals a positive association with abnormal returns on the event day (**Table D7**). Since higher emissions denote weaker environmental performance, this carbon premium is directionally consistent with the baseline E-score penalization. Finally, to address potential omitted variable bias, **Table D8** reports results across matched subsamples. The negative E-score relationship remains statistically significant across all four propensity score matching (PSM) and caliper specifications, yielding coefficients (−0.004 to −0.008) that indicate an even stronger economic effect than the baseline estimates. Collectively, these tests confirm that the H1 result is not driven by model specifications, outliers, or unobserved systematic differences between high- and low-E-score firms.

5.2 Political Alignment and Cumulative Abnormal Returns

5.2.1 Main Results

This section examines whether firms' political alignment is associated with abnormal returns around the 2024 U.S. election. Hypothesis 2 predicts that firms with stronger Republican political alignment experience higher abnormal returns around the 2024 election. **Table** presents the regression results.

Table 7. OLS regressions of abnormal returns on CPID, EPID and control variables.

Variables	CAR [0,0]	CAR [-5,+5]	CAR [0,0]	CAR [-5,+5]
CPID	0.013** (0.005)	0.008 (0.008)		
EPID			0.006** (0.002)	0.001 (0.005)
E-score	-0.003*** (0.001)	-0.005*** (0.002)	-0.003*** (0.001)	-0.005*** (0.002)
Log Market Cap	-0.005*** (0.001)	-0.005** (0.002)	-0.005*** (0.001)	-0.004* (0.002)
Market-to-Book	-0.009 (0.011)	0.036 (0.030)	-0.010 (0.011)	0.036 (0.030)
Leverage	-0.040*** (0.007)	-0.034** (0.014)	-0.040*** (0.007)	-0.034** (0.014)
Return-on-Assets	-0.045 (0.030)	-0.013 (0.063)	-0.048 (0.030)	-0.015 (0.063)
Growth	-0.008 (0.008)	-0.022 (0.020)	-0.008 (0.009)	-0.022 (0.020)
Constant	0.084*** (0.009)	0.086*** (0.027)	0.083*** (0.009)	0.085*** (0.027)
Observations	1466	1466	1466	1466
Adjusted R-squared	0.293	0.089	0.291	0.088
Standard errors	Robust	Robust	Robust	Robust
Industry fixed effects	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

The results provide support for H2 exclusively in the event-day specification. In the [0,0] window, the coefficients for both CPID (0.013, $p < 0.05$) and EPID (0.006, $p < 0.05$) are positive and statistically significant. Economically, moving from a fully Democratic to a fully Republican contribution profile (-1 to 1) corresponds to an estimated increase in abnormal returns of 2.6 percentage points for CPID and 1.2 percentage points for EPID. Given the sample's mean event-day CAR of 1.4%, this premium is highly meaningful and demonstrates that political alignment explained substantial cross-sectional variation when the election outcome resolved.

Consistent with the Efficient Market Hypothesis and Signalling argument developed in Chapter 2, the strongest evidence appears on the event day $[0,0]$, when election-related information was rapidly incorporated into prices. On the event day, investors utilized these partisan donation profiles as signals to identify potential beneficiaries of the incoming administration's broad policy agenda. If investors perceived Republican-leaning donation profiles as indicating closer alignment with the incoming administration, firms with higher CPID or EPID values were likely viewed as better positioned under the new political environment.

This pronounced event-day effect does not, however, carry over into the broader $[-5,+5]$ window, as both coefficients diminish and lose statistical significance. While this does not prove that political connectedness is entirely irrelevant over longer horizons, it suggests that political alignment functioned primarily as an immediate signal rather than a persistent factor affecting firm value. One possible interpretation is that as the post-election information environment matured, investors rapidly shifted their focus from political alignment toward more tangible factors, such as E-score, which is a function of the firm's sustainability profile and for example environmental investments.

In relation to the existing literature, the results offer several key insights. First, the immediate market reaction strictly in the $[0,0]$ window is similar to Akey's (2015) result, who document increased CAR for politically aligned firms during a short event window of $[-1,+1]$. Second, the value relevance of our continuous measures supports Ansolabehere et al.'s (2003) argument that the informational signal lies in the political direction of the alignment rather than the absolute dollar volume. Remarkably, even in the modern era of massive Super-PAC spending, our results demonstrate that donation fractions (the study's CPID and EPID variables), rather than total capital amounts, remain value-relevant for the market. Consequently, these findings contrast with Jayachandran (2006), who documented market reactions to political power shifts but found no significant relationship when analysing political alignment with donation fractions. Third, the simultaneous significance of EPID supports the arguments of Stuckatz (2021) and Bombardini and Trebbi (2025) that employee donations are not unrelated to the firm's broader corporate political alignment. While the larger coefficient for CPID indicates its function as the primary signal, the significant effect of EPID highlights the role of individual alignment. Given the sample overlap, where firms with corporate PACs inherently have politically active employees, EPID potentially captures a broader market interpretation of a unified corporate signal. Alternatively, in the absence of explicit corporate donations, the

market appears to utilize employee donation profiles as signals to infer a firm's political alignment with the incoming administration.

5.2.2 Robustness of Political Alignment Results

The baseline political alignment findings remain robust across several alternative specifications in **Appendix D**. First, the results are insensitive to alternative benchmarks, remaining qualitatively unchanged for both CPID and EPID when using the S&P 500, S&P 1500, MSCI World, Russell 1000, and Russell 2000 (**Table D9** and **Table D10**). Second, the event-day results are robust to alternative modeling choices, including a market-adjusted return model, 1st and 99th percentile CAR winsorization, and alternative industry fixed effects (**Table D11** and **Table D12**). Although statistical significance declines when clustering standard errors at the industry level due to within-industry correlation of policy expectations, the coefficients remain directionally stable. Alternative event windows provide more mixed but informative evidence (**Table D13**). In the $[-3,+3]$ window, CPID becomes insignificant while EPID remains weakly significant, indicating that employee-based alignment is not entirely confined to the event day. In the pre-election window $[-5,-1]$, CPID is insignificant while EPID is significantly negative. This pre-event underperformance likely reflects anticipatory market reactions as Trump's implied winning probability declined prior to the election (**Error! Reference source not found.**), which sharply inverted once the outcome resolved. Two final tests address sample composition and potential selection bias. Excluding non-contributing firms leaves the event-day coefficients largely unchanged while slightly increasing the significance of CPID in the $[-5,+5]$ window, confirming that the baseline results are not driven by the zero-valuation of non-contributors (**Table D14**). Furthermore, **Table D15** reports matched subsample results based on size and industry. The event-day positive relationship holds for both variables across the propensity score matching (PSM) and the stricter caliper specifications. Collectively, these tests alleviate concerns regarding omitted variable bias or systematic differences between politically aligned and non-aligned firms.

5.3 The Moderating Role of Political Alignment

5.3.1 Main Results

This section examines whether Republican political alignment moderates the relationship between environmental performance and abnormal returns. Hypothesis 3 predicts that stronger Republican political alignment weakens the negative relationship between E-score and abnormal returns, under the expectation that political connectedness functions as a hedge to

reduce regulatory friction or ease adaptation to the incoming administration's priorities. Table presents the interaction regression result.

Table 8. OLS regressions of abnormal returns on E-score, political alignment and their interaction terms.

Variables	[0,0]	[-5,+5]	[0,0]	[-5,+5]
E-score Mean Centered	-0.003*** (0.001)	-0.005** (0.002)	-0.003*** (0.001)	-0.005*** (0.002)
CPID	0.013** (0.005)	0.008 (0.008)		
EPID			0.006** (0.002)	0.001 (0.005)
E-score Mean Centered x CPID	-0.000 (0.002)	-0.005 (0.004)		
E-score Mean Centered x EPID			0.001 (0.001)	-0.001 (0.002)
Log Market Cap	-0.005*** (0.001)	-0.005** (0.002)	-0.005*** (0.001)	-0.004* (0.002)
Market-to-Book	-0.009 (0.011)	0.037 (0.030)	-0.010 (0.011)	0.036 (0.030)
Leverage	-0.040*** (0.007)	-0.033** (0.014)	-0.040*** (0.007)	-0.034** (0.014)
Return-on-Assets	-0.045 (0.030)	-0.014 (0.063)	-0.048 (0.030)	-0.015 (0.063)
Growth	-0.008 (0.008)	-0.022 (0.020)	-0.008 (0.009)	-0.022 (0.020)
Constant	0.074*** (0.010)	0.069** (0.029)	0.074*** (0.010)	0.068** (0.029)
Observations	1466	1466	1466	1466
Adjusted R-squared	0.292	0.089	0.291	0.088
Standard errors	Robust	Robust	Robust	Robust
Industry fixed effects	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

The empirical results do not provide support for H3. Across both the CPID and EPID specifications, the interaction terms are statistically insignificant and close to zero in both the event-day [0,0] window and the broader [-5,+5] window. Meanwhile, the conditional coefficients for the mean-centered E-score remain robustly negative and statistically significant across all columns. This demonstrates that for a politically neutral firm (where CPID or EPID equals zero), high environmental performance is met with a significant market penalty, and the insignificance of the interaction terms confirms that this penalization does not systematically vary with a firm's degree of Republican political alignment.

From the perspective of Signaling Theory, the absence of a significant interaction effect places an important boundary condition on the hedging logic behind H3. While corporate political alignment literature suggests that alignment with political winners is generally value-relevant (Jayachandran, 2006; Child, et al., 2021; Akey, 2015), these findings indicate that investors did not credit political contributions as a credible insurance mechanism against climate-policy

rollbacks. Descriptively, this aligns with the negative correlation between E-score and CPID reported in **Table** , confirming that environmentally progressive firms rarely utilize Republican donations as a strategic hedge. Where these contributions did occur, the market likely interpreted them as broad signals of political proximity rather than explicit evidence of regulatory immunity.

The consistent insignificance across both the event-day and broader windows provides important insights into the dynamics of this policy shock. While this does not prove that corporate political connectedness is entirely irrelevant for regulatory navigation, it suggests that investors did not price partisan donations as a sufficient shield against a systemic policy shock in this setting. One possible interpretation concerns the measurement of political alignment. CPID and EPID capture the direction of observed donations but do not directly measure institutional policy access, lobbying effectiveness, or firm-specific regulatory relief. Investors may instead have interpreted Republican donations as a general signal of political proximity (as documented in H2), while dismissing them as insufficient evidence of explicit protection from a structural climate-policy rollback. More broadly, the expected deregulatory pivot under the 2024 Trump administration was likely perceived as a sweeping, market-wide regime shift. Consequently, the repricing of environmental performance reflected a systemic reassessment of asset values, operating at a level that individual corporate political positioning was fundamentally insufficient to offset or decouple from.

5.3.2 Robustness of Interaction Results

The absence of a significant interaction effect between environmental performance and political alignment remains highly robust across all alternative specifications in **Appendix D**. First, the results are insensitive to alternative modeling choices, remaining unchanged when applying a market-adjusted return model, winsorizing CAR observations at the 1st and 99th percentiles, or employing alternative industry fixed effects (**Table D16** and **Table D17**). Across all these standard robustness checks, the interaction coefficients remain statistically insignificant.

Alternative sample compositions and event windows further confirm the baseline non-results. Excluding non-contributing firms from the sample yields no material change in the interaction coefficients, demonstrating that the lack of moderation is not an artifact of how non-contributors are treated (**Table D18**). Similarly, evaluating the interaction terms across alternative event windows, including the pre-election $[-5,-1]$ and the $[-3,+3]$ windows, yields

no statistically significant coefficients (**Table D19**). Collectively, these sensitivity checks confirm that the lack of a moderating effect is a stable and pervasive characteristic of the data, while the conditional effect of the E-score remains robustly negative and significant throughout.

6 Conclusion

6.1 Summary of Main Findings

The purpose of this study was to examine how corporate environmental performance and Republican political alignment explained equity market reactions to the Republican party's 2024 election victory. Based on an event study and cross-sectional OLS regressions on S&P 1500 firms, the empirical analysis provides three primary conclusions:

RQ1: Firms with higher E-scores experienced significantly lower cumulative abnormal returns across both event windows, suggesting investors treated environmental engagement as a financial liability amid expectations of federal deregulation

RQ2: Stronger Republican political alignment, measured through both corporate (CPID) and employee (EPID) political contributions, was associated with higher abnormal returns on the election day. This indicates that the market priced political alignment as a valuable signal of proximity to the incoming administration.

RQ3: There is no empirical evidence that political alignment moderates the relationship between environmental performance and abnormal returns. The interaction terms were statistically insignificant, showing that environmental performance was penalized market-wide, independent of a firm's political ties.

6.2 Theoretical and Practical Implications

The findings offer key theoretical contributions to the literature on ESG, specifically E-score, and corporate finance. Traditional empirical literature often assumes that the relationship between environmental performance and stock returns is universally positive and stable. Furthermore, evidence from Trump's 2016 election suggested that climate-responsible firms were rewarded because the anti-environmental shift was perceived as transitory. The 2024 results fundamentally challenge this assumption and demonstrate the conditional nature of environmental investments. When a political shock carries an explicit and credible agenda for permanent environmental deregulation, high environmental performance can pivot from a strategic asset into an immediate financial liability.

From a theoretical standpoint, this outcome supports the strict logic of shareholder primacy, highlighting that environmental initiatives are heavily reliant on an underlying regulatory and financial infrastructure (such as the Inflation Reduction Act of 2022) to maintain economic

value for equity holders. Simultaneously, it extends signaling theory within political finance. The rapid, pronounced pricing of both corporate and employee contributions confirms that investors interpret political financing as a credible, costly signal of corporate positioning that helps resolve information asymmetry during major political regime changes.

Practically, the study highlights the political uncertainty embedded in the market. For market participants, the results show that "green" or high-ESG strategies carry distinct, systemic political vulnerabilities that can trigger severe short-term underperformance during conservative political pivots. For corporations, the findings underscore a strategic paradox whereby strong environmental performance satisfies stakeholder demands under stable regimes but exposes firms to market penalization when policy shifts toward deregulation.

6.3 Limitations and Future Research

The findings of this study should be interpreted with some caution. While the analysis identifies statistically significant associations between firm characteristics and abnormal returns, it captures a broad market anticipation of a shifting political environment rather than proving that investors priced specific policy changes, or that politically aligned firms received expected political benefits. Furthermore, political contributions are used as signals of alignment, but they do not directly measure political access, lobbying effectiveness, or actual policy influence. In addition, while the event-study design captures short-term market reactions that reflect shifting expectations of the future policy landscape, it does not capture if these immediate valuation effects are reexamined or repriced as actual policies unfold over time.

To address these limitations, future research could extend this analysis by examining longer-term stock performance, realized policy outcomes, or additional measures of political activity such as lobbying expenditures or executive political connections during the 2024 election. Second, researchers could disaggregate the aggregate environmental score into sub-components, such as carbon emissions or renewable energy mix, to identify which specific dimensions drove the market penalty. Finally, further studies could compare the 2024 election with other political regime changes to assess whether the negative valuation of environmental performance observed here is specific to 2024 election or reflects a broader pattern during periods of environmental policy reversal.

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APPENDIX A

OpenSecrets Data Collection Process

OpenSecrets is a nonpartisan, independent nonprofit organization that collects, processes and provides public access to data on money in politics in the United States (OpenSecrets, n.d-c.). Nearly all its data originates from official government sources, including the Federal Election Commission, state election agencies and the IRS.

Data collection proceeded as follows. For each firm in the sample, the OpenSecrets website was searched using the firm's name and, where necessary, alternative name variations, such as excluding “Inc” or changing “Company” to “Co”. If a firm could not be located through the internal search, an external Google search was used to try to identify its OpenSecrets page. If we still did not find the OpenSecrets page after this, the firm was automatically categorized as “Neutral”. Once a firm was located, we located the “Recipients” page, the 2023-2024 election cycle was selected and a CSV file under the category “All Recipients” was downloaded, containing records of all political donations made in connection with the firm. These donations cover contributions to recipients, which could be directly to candidates or to PACs, Super PACs, and other organizations seeking to influence elections, and are categorized both by recipient party affiliation and by whether the contribution was made by the corporation itself or by individuals employed at the firm. Importantly, the individual contribution data contains no private information that could be used to identify an employee.

Following the data collection, the CSV files were matched to the sample using a fuzzy name matching script generated with the help of the AI Claude (See Appendix E for more information on AI usage), with 80% match strength set as the minimum threshold. All matches below 100% were manually verified, and any observations with CPID or EPID values outside the theoretical range of -1 to 1 were identified and corrected. This process yielded usable contribution data for 1,182 firms, which were used to construct the CPID and EPID measures described in Section 3.3.3.

APPENDIX B

Variable Definitions

Category	Variable	Definition / Measurement	Source
Dependent variable	CAR [0,0]	Cumulative abnormal return on the event day, equal AR on the event date.	Own calculation based on S&P Capital IQ Pro
Dependent variable	CAR [-5,+5]	Cumulative abnormal return over the broader event window from five trading days before to five trading days after the event.	Own calculation based on S&P Capital IQ Pro
Event-study variable	Return	Daily simple stock return, calculated as the percentage change in adjusted closing price.	Own calculation based on S&P Capital IQ Pro
Event-study variable	Market return	Daily benchmark index return, calculated as the percentage change in the adjusted closing level of the benchmark index.	Own calculation based on S&P Capital IQ Pro
Main independent variable	E-score	Environmental pillar score, measured from 0 to 100 and divided by 10 in regressions for interpretability.	S&P Capital IQ Pro
Main independent variable	CPID	Corporate Political Ideology: Republican corporate contributions minus Democratic corporate contributions, divided by total corporate contributions. See Appendix A for detailed construction procedure.	Own calculation based on data from OpenSecrets
Main independent variable	EPID	Employee Political Ideology: Republican employee contributions minus Democratic employee contributions, divided by total employee contributions. See Appendix A for detailed construction procedure.	Own calculation based on data from OpenSecrets
Interaction variable	$E\text{-score} \times CPID$	Interaction between environmental performance and corporate Republican political alignment.	Own calculation
Interaction variable	$E\text{-score} \times EPID$	Interaction between environmental performance and employee Republican political alignment.	Own calculation

Interaction variable	Mean-centred E-score	Firm-level E-score adjusted by subtracting the sample mean of E-score, used when estimating interaction models.	Own calculation
Control variable	Log Market Cap	Natural logarithm of market capitalization.	S&P Capital IQ Pro
Control variable	Leverage	Total debt divided by total assets	S&P Capital IQ Pro
Control variable	Market-to-book	Market capitalization divided by book value of equity.	S&P Capital IQ Pro
Control variable	Return on assets	Net income divided by total assets.	S&P Capital IQ Pro
Control variable	Revenue growth	One-year revenue growth.	S&P Capital IQ Pro
Fixed effects	Industry fixed effects	Industry dummy variables based on industry classification.	S&P Capital IQ Pro
Robustness variable	Log CO ₂ intensity	Natural logarithm of reported CO ₂ intensity, calculated as Scope 1 and Scope 2 emissions divided by total revenue in million USD.	S&P Capital IQ Pro
Robustness variable	Log Estimated CO ₂ intensity	Natural logarithm of estimated CO ₂ intensity, calculated as estimated Scope 1 and Scope 2 emissions divided by total revenue in million USD.	S&P Capital IQ Pro

APPENDIX C

E-score Example

This appendix provides an illustrative example of how an environmental dimension score may be constructed under the logic of S&P Global's ESG scoring framework. The purpose of the example is not to reproduce S&P Global's proprietary scoring model or the exact weights applied to any specific firm. Instead, the example illustrates the bottom-up aggregation logic described in S&P Global's methodology, where underlying question-level scores are aggregated into criterion-level scores, which are then aggregated into an environmental dimension score.

S&P Global's methodology is industry-specific, meaning that the relevant environmental criteria and their weights differ across industries depending on financial materiality. Therefore, the example below should be interpreted as a simplified illustration for a hypothetical firm in a hypothetical industry.

Step 1: Question-level scores

At the most granular level, a company receives scores for specific environmental questions or indicators. These may relate to, for example, emissions, energy use, climate strategy, water management, waste management and environmental reporting. Each question is scored on a 0–100 scale, where a higher score indicates stronger performance, disclosure or management of the relevant environmental issue.

Step 2: Aggregation into environmental criteria

Question-level scores are first aggregated into broader environmental criteria using pre-defined question weights. Table C1 provides a simplified example.

Table C1. Illustrative aggregation from question-level environmental scores to environmental criteria.

Environmental criterion	Question / indicator	Question weight within criterion	Question score	Weighted contribution
Environmental reporting	External assurance of environmental data	40%	60	24.0
Environmental reporting	Coverage of environmental reporting	60%	80	48.0
Criterion score: Environmental reporting		100%		72.0
Climate strategy	Climate-related risk assessment	40%	70	28.0
Climate strategy	Emissions reduction targets	35%	90	31.5

Climate strategy	Board oversight of climate issues	25%	65	16.25
Criterion score: Climate strategy		100%		75.75
Emissions management	Scope 1 and 2 emissions intensity	45%	55	24.75
Emissions management	Emissions reduction trend	35%	65	22.75
Emissions management	Scope 3 emissions disclosure	20%	45	9.0
Criterion score: Emissions management		100%		56.5
Energy management	Renewable energy use	55%	70	38.5
Energy management	Energy efficiency initiatives	45%	80	36.0
Criterion score: Energy management		100%		74.5
Water management	Water risk assessment	50%	60	30.0
Water management	Water withdrawal intensity	50%	75	37.5
Criterion score: Water management		100%		67.5
Waste management	Waste intensity	60%	85	51.0
Waste management	Circularity and recycling initiatives	40%	60	24.0
Criterion score: Waste management		100%		75.0

The criterion score is calculated as:

$$Criterion\ Score_c = \sum_{q=1}^Q Question\ Score_q \times Question\ Weight_q$$

For example, the Environmental reporting criterion score is calculated as:

$$(60 \times 0.40) + (80 \times 0.60) = 72.0$$

Step 3: Aggregation into the environmental dimension score

The criterion-level scores are then aggregated into the environmental dimension score using criterion weights. These weights reflect the relative materiality of each environmental criterion for the industry. Table C2 illustrates this step.

Table C2. Illustrative aggregation from environmental criteria to E-score

Environmental criterion	Criterion score	Criterion weight within environmental dimension	Weighted contribution
Environmental reporting	72.0	15%	10.80
Climate strategy	75.75	25%	18.94
Emissions management	56.5	30%	16.95
Energy management	74.5	15%	11.18
Water management	67.5	10%	6.75
Waste management	75.0	5%	3.75
Illustrative E-score		100%	68.36

The environmental dimension score is calculated as:

$$EScore_i = \sum_{c=1}^c \text{Criterion Score}_c \times \text{Criterion Weight}_c$$

Using the illustrative values in Table B2:

$$EScore_i = (72.0 \times 0.15) + (75.75 \times 0.25) + (56.5 \times 0.30) + (74.5 \times 0.15) \\ + (67.5 \times 0.10) + (75.0 \times 0.05)$$

$$EScore_i = 68.36$$

Thus, the hypothetical firm receives an illustrative E-score of 68.36 out of 100.

Interpretation

This example shows that the E-score is not based on a single environmental variable, such as emissions intensity alone. Instead, it reflects a weighted combination of several environmental criteria. A firm can therefore perform strongly in some areas, such as reporting or energy management, while receiving a lower overall environmental score if it performs weaker on more heavily weighted criteria, such as emissions management.

Appendix D

Robustness Test

Table D1. White test

Table D1. White Test for Heteroskedasticity.

Note: The table reports White test results for the main regression specifications.

Specification	Event Window	N	Chi2	Degrees of Freedom	p-value
H1: E-score	[0,0]	1466	159.58	122	0.013
H2: CPID	[0,0]	1466	177.01	123	0.001
H2: EPID	[0,0]	1466	156.490	123	0.022

Table D2. Variance Inflation Factor test

Table D2. Variance Inflation Factor (VIF) Test for Multicollinearity.

Note: The table reports VIF statistics for the main explanatory variables and controls in the H1 and H2 specifications. Industry fixed effects are excluded from the VIF test.

H1 (E-score)			H2 (CPID)			H2 (EPID)		
Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF
Log Market Cap	1.57	0.637	Log Market Cap	1.58	0.633	Log Market Cap	1.57	0.633
E-score	1.47	0.679	E-score	1.47	0.679	E-score	1.48	0.674
Return-on-Assets	1.14	0.876	Return-on-Assets	1.14	0.875	Return-on-Assets	1.14	0.875
Market-to-Book	1.07	0.934	Market-to-Book	1.07	0.932	Market-to-Book	1.07	0.932
Leverage	1.07	0.938	Growth	1.07	0.937	Growth	1.07	0.938
Growth	1.06	0.939	Leverage	1.07	0.938	Leverage	1.07	0.938
			CPID	1.01	0.991	EPID	1.02	0.977
Mean VIF	1.23		Mean VIF	1.20		Mean VIF	1.20	

Table D3. Test for Normality of Residuals

Table D3. Skewness and Kurtosis Test for Normality of Residuals

Specification	Variable	Observations	Pr(skewness)	Pr(kurtosis)	Joint Test	
					Adj Chi2(2)	Prob > Chi2
H1: E-score [0,0]	Residuals	1,466	0.000	0.000	260.460	0.000
H2: CPID [0,0]	Residuals	1,466	0.000	0.000	262.760	0.000
H2: EPID [0,0]	Residuals	1,466	0.000	0.000	260.080	0.000

The tests reject the null hypothesis of normality of the residuals on every specification

Table D4. E-score Regression Results for Alternative Event Windows

Table D4. E-score regression results for alternative event windows.

Note: The table re-estimates the E-score specifications using alternative event windows. The dependent variable is firm-level CAR measured over the event window indicated in each column. The coefficient for E-Score during [-5,-1) equals 0.0004

Variables	CAR [-3,+3]	CAR [-5,-1]
E-score	-0.005*** (0.002)	0.000 (0.001)
Log Market Cap	-0.007*** (0.002)	-0.006*** (0.001)
Market-to-Book	0.022 (0.026)	0.005 (0.014)
Leverage	-0.043*** (0.012)	-0.011 (0.009)
Return-on-Assets	-0.028 (0.058)	0.097*** (0.037)
Growth	0.003 (0.016)	-0.022** (0.010)
Constant	0.115*** (0.020)	0.079*** (0.013)
Observations	1466	1466
Adjusted R-squared	0.110	0.050
Standard errors	Robust	Robust
Industry fixed effects	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D5. E-score Regression Results Across Alternative Benchmark Indices

Table D5. E-score regression results across alternative benchmark indices.

Variables	[-5,+5]					[0,0]				
	S&P 500	S&P 1500	MSCI World	Russell 1000	Russell 2000	S&P 500	S&P 1500	MSCI World	Russell 1000	Russell 2000
E-score	-0.005*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Log Market Cap	-0.005** (0.002)	-0.005** (0.002)	-0.006** (0.002)	-0.005** (0.002)	-0.001 (0.002)	-0.005*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)	-0.000 (0.001)
Market-to-Book	0.037 (0.030)	0.036 (0.030)	0.038 (0.030)	0.036 (0.030)	0.036 (0.031)	-0.010 (0.011)	-0.010 (0.011)	-0.009 (0.011)	-0.010 (0.011)	-0.009 (0.012)
Leverage	-0.033** (0.014)	-0.034** (0.014)	-0.033** (0.014)	-0.034** (0.014)	-0.035** (0.014)	-0.039*** (0.007)	-0.039*** (0.007)	-0.039*** (0.007)	-0.039*** (0.007)	-0.040*** (0.007)
Return-on-Assets	-0.026 (0.063)	-0.021 (0.063)	-0.040 (0.063)	-0.019 (0.063)	0.026 (0.063)	-0.057* (0.030)	-0.052* (0.030)	-0.062** (0.029)	-0.053* (0.030)	-0.007 (0.031)
Growth	-0.021 (0.020)	-0.022 (0.020)	-0.019 (0.019)	-0.022 (0.020)	-0.020 (0.020)	-0.008 (0.008)	-0.008 (0.008)	-0.006 (0.008)	-0.009 (0.008)	-0.005 (0.008)
Constant	0.097*** (0.027)	0.091*** (0.027)	0.115*** (0.027)	0.089*** (0.027)	0.032 (0.027)	0.092*** (0.009)	0.084*** (0.009)	0.099*** (0.009)	0.087*** (0.009)	0.028*** (0.010)
Observations	1466	1466	1466	1466	1466	1466	1466	1466	1466	1466
R-squared	0.101	0.100	0.101	0.101	0.086	0.307	0.300	0.309	0.302	0.249
Adjusted R-squared	0.091	0.090	0.091	0.090	0.076	0.299	0.292	0.300	0.294	0.240
Standard errors	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D6. Standard Robustness Checks for the E-score Regression Results

Table D6. Standard robustness checks for the E-score regression results.

Note: The table reports robustness checks using an alternative abnormal-return calculation, winsorized CARs, industry-clustered standard errors and alternative industry classifications.

Variables	[-5,+5]				[0,0]			
	Market model	Winsorized CAR	Industry-clustered SE	Alt. Industry Classifications	Market model	Winsorized CAR	Industry-Clustered SE	Alt. Industry Classifications
E-score	-0.006*** (0.002)	-0.005*** (0.002)	-0.005** (0.002)	-0.005*** (0.002)	-0.004*** (0.001)	-0.003*** (0.001)	-0.003** (0.001)	-0.002*** (0.001)
Log Market Cap	-0.004* (0.002)	-0.004** (0.002)	-0.004 (0.003)	-0.005** (0.002)	-0.006*** (0.001)	-0.004*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)
Market-to-Book	0.053* (0.031)	0.028 (0.026)	0.036 (0.041)	0.019 (0.029)	-0.006 (0.010)	-0.014 (0.010)	-0.010 (0.010)	-0.009 (0.011)
Leverage	-0.032** (0.014)	-0.035*** (0.013)	-0.034 (0.023)	-0.033** (0.016)	-0.038*** (0.007)	-0.037*** (0.006)	-0.039 (0.024)	-0.039*** (0.007)
Return-on-Assets	-0.019 (0.064)	-0.016 (0.060)	-0.015 (0.049)	0.074 (0.063)	-0.086*** (0.030)	-0.048** (0.024)	-0.048 (0.045)	0.006 (0.029)
Growth	-0.003 (0.020)	-0.013 (0.015)	-0.022 (0.013)	-0.026 (0.021)	-0.002 (0.009)	-0.009 (0.006)	-0.009* (0.004)	-0.004 (0.008)
Constant	0.079*** (0.026)	0.082*** (0.026)	0.084** (0.031)	0.142*** (0.021)	0.101*** (0.009)	0.079*** (0.008)	0.081*** (0.012)	0.089*** (0.009)
Observations	1466	1466	1466	1466	1466	1466	1466	1466
R-squared	0.099	0.106	0.099	0.168	0.332	0.350	0.297	0.425
Adjusted R-squared	0.088	0.095	0.089	0.126	0.324	0.342	0.289	0.396
Standard errors	Robust	Robust	Industry-clustered	Robust	Robust	Robust	Industry-clustered	Robust
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D7. CO₂ Intensity Regression Results Across Main Event Windows

Table D7. CO₂ intensity regression results across main event windows.

Note: The table reports robustness results using reported and estimated CO₂ intensity as alternative environmental performance measures.

Variables	CAR [0,0]	CAR [-5,+5]	CAR [0,0]	CAR [-5,+5]
Log Co2 Intensity	0.003*** (0.001)	-0.000 (0.003)		
Log Estimated Co2 Intensity			0.003*** (0.001)	0.001 (0.002)
Log Market Cap	-0.006*** (0.001)	-0.007*** (0.002)	-0.007*** (0.001)	-0.008*** (0.002)
Market-to-Book	0.011 (0.015)	0.019 (0.031)	-0.005 (0.011)	0.041 (0.031)
Leverage	-0.037*** (0.010)	-0.032 (0.021)	-0.044*** (0.007)	-0.039*** (0.014)
Return-on-Assets	-0.045 (0.039)	-0.011 (0.085)	-0.040 (0.030)	-0.003 (0.064)
Growth	-0.014 (0.012)	-0.032 (0.035)	-0.006 (0.008)	-0.018 (0.020)
Constant	0.110*** (0.021)	0.136*** (0.041)	0.086*** (0.009)	0.102*** (0.025)
Observations	924	924	1464	1464
R-squared	0.252	0.094	0.296	0.096
Adjusted R-squared	0.238	0.077	0.288	0.085
Standard errors	Robust	Robust	Robust	Robust
Industry fixed effects	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D8. PSM Robustness Results for the E-score Specifications

Table D8. PSM robustness results for the E-score specifications.

Note: The table reports propensity score matching robustness results for the E-score specifications. Firms are matched on observable firm characteristics as described in the methodology section.

Variables	PSM [0,0]	PSM [-5+5]	Caliper [0,0]	Caliper [-5+5]
E-score	-0.005*** (0.001)	-0.008*** (0.002)	-0.004*** (0.001)	-0.006** (0.003)
Log Market Cap	-0.002* (0.001)	-0.003 (0.004)	-0.003* (0.001)	-0.002 (0.004)
Market-to-Book	-0.017 (0.012)	0.013 (0.042)	-0.027** (0.013)	0.006 (0.048)
Leverage	-0.020** (0.009)	-0.012 (0.022)	-0.034*** (0.009)	-0.035 (0.022)
Return-on-Assets	-0.073* (0.040)	-0.008 (0.087)	-0.078** (0.038)	-0.037 (0.088)
Growth	-0.007 (0.011)	-0.011 (0.024)	-0.010 (0.010)	-0.011 (0.022)
Constant	0.086*** (0.015)	0.099** (0.043)	0.085*** (0.015)	0.048 (0.043)
Observations	607	607	626	626
R-squared	0.291	0.106	0.324	0.102
Adjusted R-squared	0.270	0.080	0.305	0.077
Threshold	Top Tercile	Top Tercile	Top Tercile	Top Tercile
Matching	Size + Industry	Size + Industry	Size + Industry	Size + Industry
Replacement	Yes	Yes	No	No

Robust standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

Table D9. CPID Regression Results Across Alternative Benchmark Indices

Table D9. CPID regression results across alternative benchmark indices.

Variables	[-5,+5]					[0,0]				
	S&P 500	S&P 1500	MSCI World	Russell 2000	Russell 1000	S&P 500	S&P 1500	MSCI World	Russell 2000	Russell 1000
CPID	0.008 (0.008)	0.008 (0.008)	0.008 (0.008)	0.008 (0.008)	0.008 (0.008)	0.013** (0.005)	0.013** (0.005)	0.013** (0.005)	0.012** (0.005)	0.013** (0.005)
E-score	-0.005*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Log Market Cap	-0.005** (0.002)	-0.005** (0.002)	-0.006** (0.002)	-0.001 (0.002)	-0.005** (0.002)	-0.005*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)	-0.001 (0.001)	-0.005*** (0.001)
Market-to-Book	0.037 (0.030)	0.037 (0.030)	0.038 (0.030)	0.037 (0.031)	0.037 (0.030)	-0.009 (0.011)	-0.009 (0.011)	-0.008 (0.011)	-0.009 (0.012)	-0.009 (0.011)
Leverage	-0.034** (0.014)	-0.034** (0.014)	-0.033** (0.014)	-0.035** (0.014)	-0.034** (0.014)	-0.040*** (0.007)	-0.040*** (0.007)	-0.039*** (0.007)	-0.041*** (0.007)	-0.040*** (0.007)
Return-on-Assets	-0.024 (0.063)	-0.019 (0.063)	-0.038 (0.063)	0.028 (0.063)	-0.017 (0.063)	-0.054* (0.030)	-0.049 (0.030)	-0.059** (0.030)	-0.004 (0.031)	-0.050* (0.030)
Growth	-0.021 (0.020)	-0.021 (0.020)	-0.018 (0.019)	-0.020 (0.020)	-0.022 (0.020)	-0.008 (0.009)	-0.007 (0.009)	-0.005 (0.008)	-0.005 (0.008)	-0.008 (0.008)
Constant	0.099*** (0.027)	0.093*** (0.027)	0.116*** (0.027)	0.034 (0.027)	0.090*** (0.027)	0.094*** (0.009)	0.087*** (0.009)	0.102*** (0.009)	0.031*** (0.010)	0.089*** (0.009)
Observations	1466	1466	1466	1466	1466	1466	1466	1466	1466	1466
R-squared	0.102	0.100	0.102	0.086	0.101	0.311	0.305	0.313	0.253	0.307
Adjusted R-squared	0.090	0.089	0.091	0.075	0.090	0.303	0.296	0.305	0.243	0.298
Standard errors	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D10. EPID Regression Results Across Alternative Benchmark Indices

Table D10. EPID regression results across alternative benchmark indices.

Variables	[-5,+5]					[0,0]				
	S&P 500	S&P 1500	MSCI World	Russell 2000	Russell 1000	S&P 500	S&P 1500	MSCI World	Russell 2000	Russell 1000
EPID	0.001 (0.005)	0.001 (0.005)	0.001 (0.005)	0.000 (0.005)	0.001 (0.005)	0.006** (0.002)	0.006** (0.002)	0.006** (0.002)	0.005** (0.002)	0.006** (0.002)
E-score	-0.005*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.005*** (0.002)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Log Market Cap	-0.005** (0.002)	-0.005** (0.002)	-0.006** (0.002)	-0.001 (0.002)	-0.005** (0.002)	-0.005*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)	-0.000 (0.001)	-0.005*** (0.001)
Market-to-Book	0.037 (0.030)	0.037 (0.030)	0.038 (0.030)	0.036 (0.031)	0.037 (0.030)	-0.009 (0.011)	-0.009 (0.011)	-0.008 (0.011)	-0.009 (0.012)	-0.010 (0.011)
Leverage	-0.033** (0.014)	-0.033** (0.014)	-0.033** (0.014)	-0.034** (0.014)	-0.033** (0.014)	-0.039*** (0.007)	-0.040*** (0.007)	-0.039*** (0.007)	-0.040*** (0.007)	-0.040*** (0.007)
Return-on-Assets	-0.025 (0.063)	-0.021 (0.063)	-0.040 (0.063)	0.026 (0.063)	-0.025 (0.063)	-0.057* (0.030)	-0.051* (0.030)	-0.062** (0.029)	-0.007 (0.031)	-0.053* (0.030)
Growth	-0.021 (0.020)	-0.021 (0.020)	-0.019 (0.019)	-0.020 (0.020)	-0.021 (0.020)	-0.008 (0.009)	-0.008 (0.009)	-0.006 (0.008)	-0.005 (0.008)	-0.008 (0.009)
Constant	0.097*** (0.027)	0.092*** (0.027)	0.115*** (0.027)	0.032 (0.027)	0.097*** (0.027)	0.093*** (0.009)	0.086*** (0.009)	0.101*** (0.009)	0.030*** (0.010)	0.088*** (0.009)
Observations	1466	1466	1466	1466	1466	1466	1466	1466	1466	1466
R-squared	0.101	0.100	0.101	0.086	0.101	0.310	0.303	0.312	0.251	0.305
Adjusted R-squared	0.090	0.089	0.090	0.075	0.090	0.301	0.294	0.303	0.241	0.296
Standard errors	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D11. Standard Robustness Checks for the CPID Regression Results

Table D11. Standard robustness checks for the CPID regression results.

Note: The table reports robustness checks for the CPID specifications using an alternative abnormal-return calculation, winsorized CARs, industry-clustered standard errors and alternative industry classifications.

Variables	[-5,+5]				[0,0]			
	Market model	Winsorized CAR	Industry-clustered SE	Alt. Industry Classifications	Market model	Winsorized CAR	Industry-Clustered SE	Alt. Industry Classifications
CPID	0.010 (0.008)	0.007 (0.007)	0.008 (0.007)	0.012 (0.008)	0.013*** (0.005)	0.010*** (0.004)	0.013* (0.006)	0.011** (0.005)
E-score	-0.006*** (0.002)	-0.005*** (0.002)	-0.005** (0.002)	-0.005*** (0.002)	-0.004*** (0.001)	-0.003*** (0.001)	-0.003** (0.001)	-0.002*** (0.001)
Log Market Cap	-0.004* (0.002)	-0.004** (0.002)	-0.005 (0.003)	-0.005** (0.002)	-0.006*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)	-0.006*** (0.001)
Market-to-Book	0.053* (0.031)	0.029 (0.026)	0.036 (0.041)	0.019 (0.029)	-0.006 (0.011)	-0.013 (0.010)	-0.009 (0.010)	-0.009 (0.012)
Leverage	-0.032** (0.014)	-0.035*** (0.013)	-0.034 (0.024)	-0.034** (0.016)	-0.038*** (0.007)	-0.037*** (0.006)	-0.040 (0.024)	-0.040*** (0.007)
Return on Assets	-0.017 (0.064)	-0.014 (0.060)	-0.013 (0.048)	0.076 (0.064)	-0.083*** (0.030)	-0.046* (0.024)	-0.045 (0.046)	0.007 (0.029)
Growth	-0.003 (0.020)	-0.012 (0.015)	-0.022 (0.013)	-0.025 (0.021)	-0.001 (0.009)	-0.008 (0.006)	-0.008* (0.004)	-0.003 (0.008)
Constant	0.081*** (0.026)	0.084*** (0.026)	0.086** (0.031)	0.049** (0.022)	0.103*** (0.009)	0.081*** (0.009)	0.084*** (0.012)	0.062*** (0.010)
Observations	1466	1466	1466	1466	1466	1466	1466	1466
R-squared	0.100	0.106	0.100	0.169	0.336	0.353	0.302	0.428
Adjusted R-squared	0.088	0.095	0.089	0.127	0.328	0.345	0.293	0.399
Standard errors	Robust	Robust	Industry-clustered	Robust	Robust	Robust	Industry-clustered	Robust
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D12. Standard Robustness Checks for the EPID Regression Results.

Table D12. Standard robustness checks for the EPID regression results.

Note: The table reports robustness checks for the EPID specifications using an alternative abnormal-return calculation, winsorized CARs, industry-clustered standard errors and alternative industry classifications

Variables	[-5,+5]				[0,0]			
	Market model	Winsorized CAR	Industry-clustered SE	Alt. Industry Classifications	Market model	Winsorized CAR	Industry-Clustered SE	Alt. Industry Classifications
EPID	0.001 (0.005)	0.000 (0.004)	0.001 (0.005)	0.006 (0.005)	0.006*** (0.002)	0.004** (0.002)	0.006* (0.003)	0.006*** (0.002)
E-score	-0.006*** (0.002)	-0.005*** (0.002)	-0.005** (0.002)	-0.005*** (0.002)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003** (0.001)	-0.002*** (0.001)
Log Market Cap	-0.004* (0.002)	-0.004** (0.002)	-0.004 (0.003)	-0.005** (0.002)	-0.006*** (0.001)	-0.004*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)
Market-to-Book	0.053* (0.031)	0.028 (0.026)	0.036 (0.041)	0.020 (0.029)	-0.006 (0.010)	-0.014 (0.010)	-0.010 (0.010)	-0.009 (0.011)
Leverage	-0.032** (0.014)	-0.035*** (0.013)	-0.034 (0.024)	-0.033** (0.016)	-0.038*** (0.007)	-0.037*** (0.006)	-0.040 (0.023)	-0.039*** (0.007)
Return on Assets	-0.019 (0.064)	-0.016 (0.060)	-0.015 (0.049)	0.074 (0.063)	-0.086*** (0.030)	-0.048** (0.024)	-0.048 (0.045)	0.005 (0.029)
Growth	-0.003 (0.020)	-0.013 (0.015)	-0.022 (0.013)	-0.025 (0.021)	-0.001 (0.009)	-0.009 (0.006)	-0.008* (0.004)	-0.004 (0.008)
Constant	0.080*** (0.026)	0.083*** (0.026)	0.085** (0.031)	0.047** (0.022)	0.103*** (0.009)	0.080*** (0.008)	0.083*** (0.013)	0.060*** (0.010)
Observations	1466	1466	1466	1466	1466	1466	1466	1466
R-squared	0.099	0.106	0.099	0.169	0.335	0.352	0.300	0.428
Adjusted R-squared	0.088	0.094	0.088	0.126	0.326	0.344	0.291	0.399
Standard errors	Robust	Robust	Industry-clustered	Robust	Robust	Robust	Industry-clustered	Robust
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D13. CPID and EPID Regression Results for Alternative Event Windows

Table D13. CPID and EPID regression results for alternative event windows.

Note: The table re-estimates the political alignment specifications using alternative event windows. The dependent variable is firm-level CAR measured over the event window indicated in each column.

Variables	CAR [-3,+3]	CAR [-5,-1]	CAR [-3,+3]	CAR [-5,-1]
CPID	0.009 (0.008)	0.002 (0.004)		
EPID			0.007* (0.004)	-0.007** (0.003)
E-score	-0.005*** (0.002)	0.000 (0.001)	-0.005*** (0.002)	0.000 (0.001)
Log Market Cap	-0.008*** (0.002)	-0.006*** (0.001)	-0.007*** (0.002)	-0.006*** (0.001)
Market-to-Book	0.023 (0.026)	0.005 (0.014)	0.023 (0.026)	0.004 (0.014)
Leverage	-0.044*** (0.012)	-0.011 (0.009)	-0.044*** (0.012)	-0.010 (0.009)
Return-on-Assets	-0.026 (0.058)	0.097*** (0.037)	-0.028 (0.058)	0.096** (0.037)
Growth	0.003 (0.016)	-0.022* (0.010)	0.003 (0.016)	-0.022* (0.010)
Constant	0.117*** (0.021)	0.080*** (0.013)	0.117*** (0.020)	0.077*** (0.013)
Observations	1466	1466	1466	1466
R-squared	0.121	0.061	0.122	0.064
Adjusted R-squared	0.110	0.049	0.111	0.052
Standard errors	Robust	Robust	Robust	Robust
Industry fixed effects	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D14. CPID and EPID Regressions Results Excluding Non-Contributing Firms

Table D14. CPID and EPID regression results excluding non-contributing firms.

Note: The table re-estimates the political alignment specifications after excluding firms without observed political contributions.

Variables	CAR [0,0]	CAR [-5,+5]	CAR [0,0]	CAR [-5,+5]
CPID	0.013** (0.006)	0.016* (0.009)		
EPID			0.006*** (0.002)	0.000 (0.005)
E-score	-0.004*** (0.001)	-0.004* (0.003)	-0.003*** (0.001)	-0.005** (0.002)
Log Market Cap	-0.003* (0.002)	-0.003 (0.003)	-0.005*** (0.001)	-0.004 (0.003)
Market-to-Book	0.002 (0.021)	-0.004 (0.035)	-0.009 (0.013)	0.009 (0.026)
Leverage	-0.044*** (0.015)	-0.061** (0.026)	-0.040*** (0.008)	-0.036** (0.016)
Return-on-Assets	-0.150** (0.064)	-0.055 (0.120)	-0.052 (0.034)	-0.058 (0.069)
Growth	-0.013 (0.013)	-0.035 (0.023)	-0.002 (0.009)	0.001 (0.017)
Constant	0.126*** (0.023)	0.113** (0.046)	0.107*** (0.021)	0.101*** (0.034)
Observations	520	520	1182	1182
Adjusted R-squared	0.267	0.106	0.293	0.089
Standard errors	Robust	Robust	Robust	Robust
Industry fixed effects	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D15. PSM Robustness Results for the CPID and EPID Specifications

Table D15. PSM robustness results for the full-sample CPID and EPID specifications.

Note: The table reports propensity score matching robustness results for the political alignment specifications. Firms are matched on observable firm characteristics as described in the methodology section.

Variable	PSM [0,0]	PSM [-5+5]	Caliper [0,0]	Caliper [-5+5]	PSM [0,0]	PSM [-5+5]	Caliper [0,0]	Caliper [-5+5]
CPID	0.014** (0.006)	0.008 (0.010)	0.013** (0.006)	0.009 (0.009)				
EPID					0.007*** (0.003)	0.002 (0.005)	0.007*** (0.003)	0.003 (0.005)
E-score	-0.004*** (0.001)	-0.006*** (0.002)	-0.003*** (0.001)	-0.005** (0.002)	-0.003*** (0.001)	-0.008*** (0.002)	-0.003*** (0.001)	-0.004** (0.002)
Log Market Cap	-0.004*** (0.001)	-0.005* (0.003)	-0.005*** (0.001)	-0.004 (0.003)	-0.006*** (0.001)	-0.001 (0.003)	-0.005*** (0.001)	-0.006** (0.003)
Market-to-Book	-0.004 (0.017)	-0.009 (0.029)	0.002 (0.018)	0.012 (0.032)	-0.007 (0.019)	0.071 (0.047)	-0.007 (0.017)	0.037 (0.029)
Leverage	-0.040*** (0.011)	-0.053*** (0.018)	-0.047*** (0.008)	-0.049*** (0.016)	-0.047*** (0.009)	-0.067*** (0.018)	-0.047*** (0.008)	-0.042*** (0.016)
Return-on-Assets	-0.082* (0.048)	0.055 (0.082)	-0.081** (0.033)	-0.005 (0.073)	-0.092** (0.037)	-0.068 (0.077)	-0.056 (0.035)	-0.040 (0.071)
Growth	-0.015 (0.010)	-0.020 (0.018)	-0.017** (0.007)	-0.029* (0.016)	-0.012 (0.009)	-0.024 (0.017)	-0.010 (0.008)	-0.010 (0.015)
Constant	0.047*** (0.012)	0.083*** (0.026)	0.055*** (0.012)	0.061** (0.024)	0.086*** (0.013)	0.036 (0.041)	0.065** (0.030)	0.122** (0.054)
Observations	772	772	1006	1006	881	881	1067	1067
R-squared	0.297	0.130	0.329	0.105	0.359	0.139	0.345	0.128
Adjusted R-squared	0.280	0.109	0.317	0.089	0.346	0.121	0.334	0.113
Threshold	Top Quartile	Top Quartile	Top Quartile	Top Quartile	Top Tercile	Top Tercile	Top Tercile	Top Tercile
Matching	Size + Industry	Size + Industry	Size + Industry	Size + Industry	Size + Industry	Size + Industry	Size + Industry	Size + Industry
Replacement	Yes	Yes	No	No	Yes	Yes	No	No

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D16. Standard Robustness Checks for the CPID Interaction Specifications

Table D16. Standard robustness checks for the CPID interaction specifications.

Note: The table reports robustness checks for the E-score $\times$ CPID interaction specifications using alternative abnormal-return calculations, winsorized CARs, industry-clustered standard errors and alternative industry classifications.

Variables	[-5,+5]				[0,0]			
	Market model	Winsorized CAR	Industry-clustered SE	Alt. Industry Classifications	Market model	Winsorized CAR	Industry-Clustered SE	Alt. Industry Classifications
E-score Mean Centered	-0.006*** (0.002)	-0.004** (0.002)	-0.005** (0.002)	-0.005*** (0.002)	-0.004*** (0.001)	-0.003*** (0.001)	-0.003** (0.001)	-0.002*** (0.001)
CPID	0.010 (0.008)	0.007 (0.008)	0.008 (0.007)	0.012 (0.008)	0.013*** (0.005)	0.010*** (0.004)	0.013* (0.006)	0.011** (0.005)
CPID X E-score	-0.005 (0.004)	-0.004 (0.004)	-0.005 (0.003)	-0.001 (0.004)	-0.000 (0.002)	0.000 (0.002)	-0.000 (0.002)	0.003 (0.002)
Log Market Cap	-0.004* (0.002)	-0.004** (0.002)	-0.005 (0.003)	-0.005** (0.002)	-0.006*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)	-0.006*** (0.001)
Market-to-Book	0.053* (0.031)	0.029 (0.026)	0.037 (0.041)	0.019 (0.029)	-0.006 (0.011)	-0.013 (0.010)	-0.009 (0.010)	-0.009 (0.012)
Leverage	-0.031** (0.014)	-0.034*** (0.013)	-0.033 (0.024)	-0.034** (0.016)	-0.038*** (0.007)	-0.037*** (0.006)	-0.040 (0.024)	-0.040*** (0.007)
Return-on-Assets	-0.018 (0.064)	-0.015 (0.060)	-0.014 (0.049)	0.076 (0.064)	-0.083*** (0.030)	-0.046* (0.024)	-0.045 (0.046)	0.008 (0.029)
Growth	-0.003 (0.020)	-0.012 (0.015)	-0.022 (0.013)	-0.025 (0.021)	-0.001 (0.009)	-0.008 (0.006)	-0.008* (0.004)	-0.003 (0.008)
Constant	0.060** (0.029)	0.069** (0.028)	0.069* (0.034)	0.177*** (0.025)	0.092*** (0.010)	0.072*** (0.009)	0.074*** (0.014)	0.086*** (0.012)
Observations	1466	1466	1466	1466	1466	1466	1466	1466
R-squared	0.100	0.107	0.101	0.169	0.336	0.353	0.302	0.429
Adjusted R-squared	0.088	0.095	0.089	0.126	0.327	0.345	0.292	0.399
Standard errors	Robust	Robust	Industry-clustered	Robust	Robust	Robust	Industry-clustered	Robust
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D17. Standard Robustness Checks for the EPID Interaction Specifications

Table D17. Standard robustness checks for the EPID interaction specifications.

Note: The table reports robustness checks for the E-score $\times$ EPID interaction specifications using an alternative abnormal-return calculation, winsorized CARs, industry-clustered standard errors and alternative industry classifications.

Variables	[-5,+5]				[0,0]			
	Market model	Winsorized CAR	Industry-clustered SE	Alt. Industry Classifications	Market model	Winsorized CAR	Industry-Clustered SE	Alt. Industry Classifications
E-score Mean Centered	-0.007*** (0.002)	-0.005*** (0.002)	-0.005** (0.002)	-0.005*** (0.002)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003** (0.001)	-0.002** (0.001)
EPID	0.001 (0.005)	0.000 (0.004)	0.001 (0.005)	0.006 (0.005)	0.006*** (0.002)	0.004** (0.002)	0.006* (0.003)	0.006*** (0.002)
EPID X E-score	-0.001 (0.002)	-0.000 (0.002)	-0.001 (0.002)	-0.000 (0.002)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Log Market Cap	-0.004* (0.002)	-0.004** (0.002)	-0.004 (0.003)	-0.005** (0.002)	-0.006*** (0.001)	-0.004*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)
Market-to-Book	0.053* (0.031)	0.028 (0.026)	0.036 (0.041)	0.020 (0.029)	-0.006 (0.010)	-0.014 (0.010)	-0.010 (0.010)	-0.009 (0.011)
Leverage	-0.031** (0.014)	-0.035*** (0.013)	-0.034 (0.024)	-0.033** (0.016)	-0.038*** (0.007)	-0.037*** (0.006)	-0.040 (0.023)	-0.039*** (0.007)
Return on Assets	-0.020 (0.064)	-0.016 (0.060)	-0.015 (0.050)	0.073 (0.063)	-0.085*** (0.030)	-0.048** (0.024)	-0.048 (0.044)	0.005 (0.029)
Growth	-0.003 (0.020)	-0.013 (0.015)	-0.022 (0.013)	-0.026 (0.021)	-0.001 (0.009)	-0.009 (0.006)	-0.008* (0.004)	-0.003 (0.008)
Constant	0.059** (0.029)	0.068** (0.028)	0.068* (0.035)	0.031 (0.025)	0.092*** (0.010)	0.072*** (0.009)	0.074*** (0.014)	0.054*** (0.011)
Observations	1466	1466	1466	1466	1466	1466	1466	1466
R-squared	0.099	0.106	0.099	0.169	0.335	0.352	0.300	0.429
Adjusted R-squared	0.087	0.094	0.088	0.126	0.326	0.344	0.291	0.399
Standard errors	Robust	Robust	Industry-clustered	Robust	Robust	Robust	Industry-clustered	Robust
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D18. CPID and EPID Interaction Regression Results Excluding Non-Contributing Firms

Table D18. CPID and EPID interaction regression results excluding non-contributing firms.

Note: The table re-estimates the interaction specifications after excluding firms without observed political contributions.

Variables	[0,0]	[-5,+5]	[0,0]	[-5,+5]
E-score Mean Centered	-0.004*** (0.001)	-0.004 (0.003)	-0.003*** (0.001)	-0.005** (0.002)
CPID	0.013** (0.006)	0.016* (0.009)		
EPID			0.006*** (0.002)	0.000 (0.005)
E-score Mean centered x CPID	0.001 (0.002)	-0.005 (0.004)		
E-score Mean Centered x EPID			0.001 (0.001)	-0.001 (0.002)
Log Market Cap	-0.003* (0.002)	-0.003 (0.003)	-0.005*** (0.001)	-0.004 (0.003)
Market-to-Book	0.002 (0.021)	-0.003 (0.036)	-0.009 (0.013)	0.009 (0.026)
Leverage	-0.045*** (0.015)	-0.059** (0.026)	-0.040*** (0.008)	-0.036** (0.016)
Return-on-Assets	-0.149** (0.065)	-0.057 (0.120)	-0.051 (0.034)	-0.059 (0.069)
Growth	-0.013 (0.013)	-0.035 (0.023)	-0.002 (0.009)	0.001 (0.017)
Constant	0.010 (0.019)	0.001 (0.033)	0.077*** (0.012)	0.052* (0.031)
Observations	520	520	1182	1182
Adjusted R-squared	0.266	0.106	0.293	0.089
Standard errors	Robust	Robust	Robust	Robust
Industry fixed effects	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table D19. CPID and EPID Interaction Regression Results for Alternative Event Windows

Table D19. CPID and EPID interaction regression results for alternative event windows.

Note: The table re-estimates the interaction specifications using alternative event windows. The dependent variable is firm-level CAR measured over the event window indicated in each column.

Variables	[-3,+3]	[-5,-1]	[-3,+3]	[-5,-1]
E-score Mean Centered	-0.005*** (0.002)	0.001 (0.001)	-0.005*** (0.002)	0.000 (0.001)
CPID	0.009 (0.008)	0.002 (0.004)		
EPID			0.007 (0.004)	-0.007** (0.003)
E-score Mean centered x CPID	-0.003 (0.004)	-0.001 (0.002)		
E-score Mean Centered x EPID			-0.002 (0.002)	0.001 (0.001)
Log Market Cap	-0.008*** (0.002)	-0.006*** (0.001)	-0.007*** (0.002)	-0.006*** (0.001)
Market-to-Book	0.023 (0.026)	0.005 (0.014)	0.023 (0.026)	0.004 (0.014)
Leverage	-0.043*** (0.012)	-0.011 (0.009)	-0.043*** (0.012)	-0.010 (0.009)
Return-on-Assets	-0.027 (0.058)	0.097*** (0.037)	-0.029 (0.058)	0.097*** (0.037)
Growth	0.003 (0.016)	-0.022** (0.010)	0.003 (0.016)	-0.022** (0.010)
Constant	0.101*** (0.023)	0.081*** (0.015)	0.102*** (0.023)	0.078*** (0.015)
Observations	1466	1466	1466	1466
R-squared	0.121	0.061	0.122	0.064
Adjusted R-squared	0.110	0.048	0.111	0.052
Standard errors	Robust	Robust	Robust	Robust
Industry fixed effects	Yes	Yes	Yes	Yes

Robust standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Appendix E

AI Statement

Generative AI tools, including GPT by OpenAI and Claude by Anthropic, have been used as support during the thesis process. Methodologically, these models were used as support with data processing. This includes generating Python code for creating and matching the political alignment variables to the correct firms from unique CSV files for each firm and identifying relevant STATA commands to reach desired outcomes for the thesis's quantitative parts. With regard to writing AI has been used in all parts of the thesis, the models were used to correct grammatical errors, suggest improvements to text, and identify inconsistencies in the manuscript and suggest possible literature to read and reference. The authors take full responsibility for all content within this paper.